This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

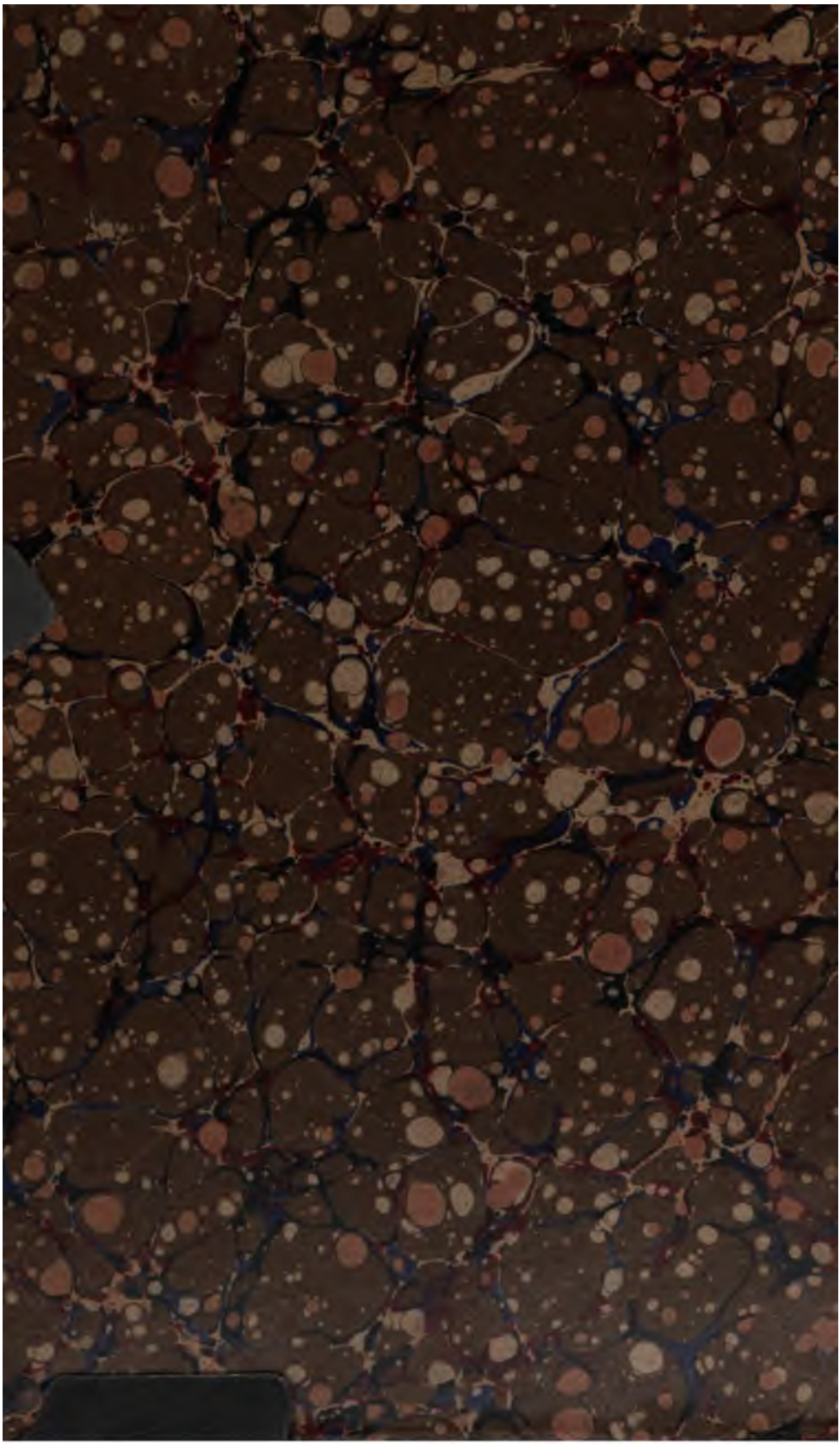
+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

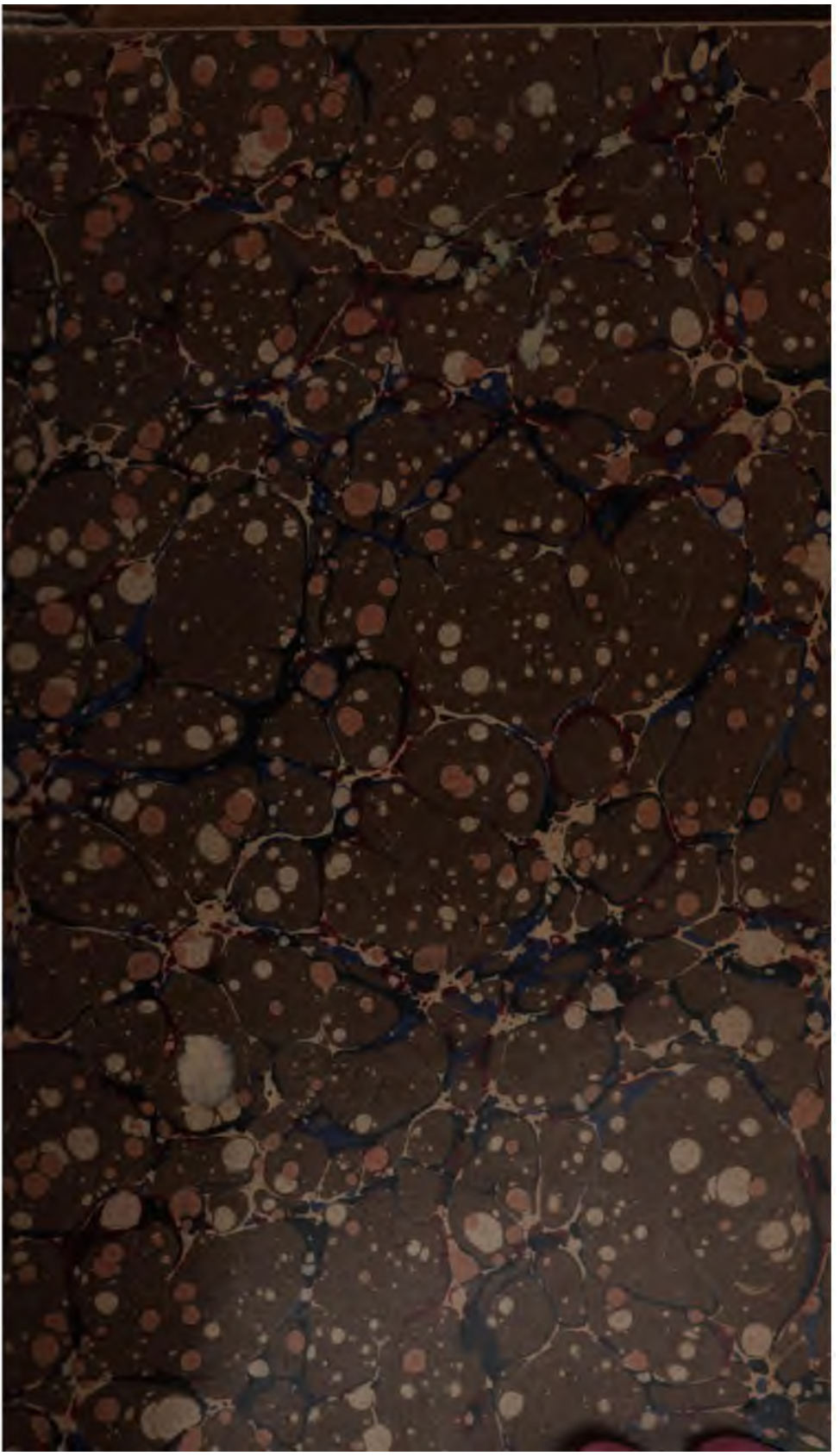
+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`





5689- 132209

TRANSACTIONS

OF THE

AMERICAN

ENTOMOLOGICAL SOCIETY,

AND

PROCEEDINGS

OF THE

ENTOMOLOGICAL SECTION

OF THE

ACADEMY OF NATURAL SCIENCES.

VOL. XIII.

PHILADELPHIA:
PAUL C. STOCKHAUSEN, ENTOMOLOGICAL PRINTER.
1886.

Digitized by Google

LIST OF PAPERS.

PAGE

ASHMEAD, WILLIAM H.

Synopsis of the North American Subfamilies and Genera of Cynipidæ 59

Studies on the North American Chalcididæ, with descriptions of new species from Florida. . . . 125

BLAKE, CHARLES A.

Monograph of the Mutillidæ of North America . . 179

HOLLAND, REV. W. J.

Contributions to a knowledge of the Lepidoptera of West Africa 325

HORN, GEORGE H., M. D.

Dinapate Wrightii and its larva 1

A monograph of the species of the subfamilies Eucneminæ, Cerophytinæ and Perothopinæ inhabiting the United States 5

A monograph of the species of Chrysobothris inhabiting the United States 65

A Review of the species described by Olivier in the "Entomologie" 135

Notes on the "Biologia Centrali-Americana" . . vii

Notes from the Museum at Cambridge xi

HOWARD, L. O.

A generic Synopsis of the hymenopterous Family Proctotrupidæ 169

HULST, GEORGE D.

Descriptions of new Pyralidæ 145

WILLISTON, S. W.

Dipterological Notes and Descriptions 287

Catalogue of the described Species of South American Syrphidæ 308

83314

TRANSACTIONS

OF THE

AMERICAN ENTOMOLOGICAL SOCIETY.

VOLUME XIII.

DINAPATE WRIGHTII and its larva.

BY GEORGE H. HORN, M. D.

DINAPATE n. g. (Bostrychinæ)

Form cylindrical, rather massive; head rather large, inferior; eyes round, prominent; clypeus truncate, labrum transverse ciliate in front; mandibles stout, pyramidal, acute at tip; maxillæ ciliate at tip, the palpi moderate in length, slightly ciliate, the last joint elongate-oval; mentum transverse, emarginate (ligula and palpi absent in my specimens); antennæ inserted between the eye and base of mandibles, ten-jointed, first joint as long as the next four, second as wide as long, joints three to seven broader than long, obconical, slightly flattened, last three joints forming a loose club which is as long as joints two to seven together and more than twice as wide, the joints of the club wider than long; thorax very convex, oboval, broader than long with asperities antero-laterally; scutellum oval at tip; elytra not flattened, the extreme tip sinuately truncate; prosternum very short in front of the coxæ, these ovate, contiguous, the cavities confluent and very narrowly enclosed behind; middle coxæ moderately separated, the mesosternum oblique; metasternum moderately long, the episterna wide, parallel, the posterior coxæ very narrowly separated; abdomen with five equal segments; legs moderate, the tibiæ dilated and strongly dentate externally; tarsi rather slender, nearly as long as the tibiæ, the first joint short, second as long as the fifth, second and third short and equal, last joint with a rather long onychium, the claws strong and arcuate; body winged.

The characters given above indicate a genus closely related to Bostrychus and Amphicerus, and like the latter without frontal margin, but with a slight projection over the base of the antennæ. The head is not so completely inferior as in those genera nor are the first two joints of the antennæ as short in comparison with the next five. The most striking difference, however, is in the structure of the tibiæ with the outer edge strongly dentate.

The first fragments of this genus received by me consisted of a hind body and a head without mouth parts, excepting the mandibles. Supposing the head (which I now know to be larval) to belong to the fragments of body, the genus has been characterized in verbal remarks made before the Academy of Natural Sciences as eyeless, and therefore the largest blind Coleopter known. The discovery of additional material enables me now to correct an error which has unfortunately appeared in print.

D. Wrightii n. sp.—Black, shining, beneath brown sparsely pubescent; head broader behind the eyes, finely punctate, a vague median frontal impression; thorax oboval broader than long, nearly as wide as the elytra, very convex, densely granulate in front and posteriorly, roughly asperate at the sides anteriorly; elytra parallel, declivous posteriorly, the apices sinuately truncate, the sutural angle acute, the disc vaguely bicostate, the costæ terminating in tuberculiform elevations (♀) or with the inner costa prolonged in a spine (♂), the surface above with shallow cribrate punctures, the sides smoother and with two indistinct costæ beneath the humeral umbone; legs moderate, femora sparsely punctate; body beneath rather finely punctate, the abdomen more densely and with pale brownish pubescence. Length 1.50 - 1.86 inch; 38 - 47 mm.

The measurements are taken from the apex of the elytra to the anterior margin of the thorax; the smaller specimens are females. A size is thus indicated exceeding any Bostrichide known.

For the fragments in my possession I am indebted to the untiring exertions of Mr. W. G. Wright, of San Bernardino, Cal., a zealous Botanist, for whom neither the privations incident to an exploration of the Mojave Desert nor the jealous watchfulness of the Indians, seemed to have had any terrors.

Mojave Desert, California.

As the habits of this insect and its larva are now being investigated by Mr. Wright, I refrain from mentioning any matters of this character, as comparatively little is known except its food plant. It is to be expected that in the near future we will have full details from him. Should it prove to infest but the one plant it is likely to be at all times rare, and possibly to disappear.

DESCRIPTION OF LARVA.

FORM robust, convex, the ventral surface flat, gradually narrower from the prothoracic to the last segment, the last four segments recurved, their ventral surface in contact with that of the preceding segments; color whitish, consistence soft.

SEGMENTS twelve; three thoracic, nine abdominal.

PROTHORAX large, massive, somewhat narrowed in front, flat above, yellowish white, a dorsal and two lateral fuscous spaces, the latter including an elevated serrate line; spiracle large, fusiform in outline.

MESO- and METATHORACIC segments consisting of a dorsal and infero-lateral piece, the latter as seen from the side larger; these segments without spiracles.

ABDOMINAL segments. The first two consist of two dorsal pieces, the division indicated by a fold merely, the spiracles in these segments smaller than the prothoracic and situated in a rhomboidal depression between the dorsal and infero-lateral plates; segments three to eight gradually less distinctly divided on the dorsal portion, the spiracles in each gradually smaller and situated at the lower end of the dorsal division. Last segment obtusely ovate, scarcely plicate dorsally and without spiracle, the anal opening ventral and longitudinal.

SPIRACLES. Of these there are nine on each side, all functional; the first is situated at the side of the prothoracic segment, the others in the first eight ventral segments; they gradually decrease in size from the first to the last.

LEGS on the three thoracic segments nearly equal, with four articulations, the femoral piece longer, the tibia terminated by a small cleft claw, the under portion of which is short; surface of legs rather hairy.

HEAD very deeply inserted in the prothorax; the exposed portion dark chitinous, the internal ovate flattened on the under side, the anterior margin of head forming a thickened projection, the clypeus hemi-hexagonal with a chitinous border.

LABRUM transverse, ciliate, the anterior margin arcuate.

MANDIBLES stout, pyramidal, the apices chisel shaped, transversely wrinkled above; behind the base of the mandibles an oval tubercle of the side of the head.

MAXILLÆ with a large, irregularly quadrangular, basal piece, surmounted by an oval lobe, the inner edge of which is truncate, the surface densely ciliate; the palpi 3-jointed, the first largest, obovate, second narrower and shorter, the third slender, subuliform.

MENTUM trapezoidal, the sides arcuate, apex truncate, face obliquely impressed each side; the submentum broader, of the same general form; palpi similar to the maxillary, but much swollen, the ligula concealed by them, semi-circular, the palpi and ligula rather densely pilose.

ANTENNÆ small, situated near the base of the mandibles above the oval tubercle, 3-jointed, the first joint short, cylindrical, second narrower and longer, the third small, slender and bisetose at tip.

This larva reproduces the form and nearly all the details of *Apate capucina* as published by Perris (Ann. Fr. 1850, pl. xvi, 1). The antennæ are there described as 4-jointed, but the conical basal piece as described seems rather to be the protuberant connecting membrane.

The other parts figured by Perris are rather diagrams than real illustrations. The accompanying figures will give a fair idea of the imago and the larva, obviating the necessity for a very detailed description.

The head of the larva is remarkable in its size and the perfection of the mouth parts. It is entirely without trace of visual organs, although it is probable that the post-mandibular tubercle becomes the eye in the imago.

It is probable that the larva figured on the accompanying plate is fully grown. Two specimens were kindly sent me by Mr. W. G. Wright, one of which will be placed in the Museum of Comparative Zoology at Cambridge, for the use of those who have occasion to study the instructive series of larvæ there acccumulated.

DESCRIPTION OF PLATE I.

Fig. 1.—**Dinapate Wrightii**, upper view of the female, natural size.

Fig. 2.—Lateral view of the male, natural size.

Fig. 3.—Antenna of female, the club joints partly restored, enlarged.

Fig. 4.—Posterior leg of male, viewed from beneath, showing the arrangement of the teeth in three series, enlarged.

Fig. 5.—Larva, natural size.

Fig. 6.—Head of larva probably male, much enlarged.

Fig. 7.—Antenna of larva, enlarged.

Fig. 8.—Maxillæ, mentum and adjacent parts of larva much enlarged.

Fig. 9.—Mandible, upper view, enlarged.

Fig. 10.—Mandible, inner side, enlarged.

Fig. 11.—Front leg of larva, enlarged.

Fig. 12.—The claw of front leg, showing its cleft structure, much enlarged.

A monograph of the species of the sub-families EUCNEMINÆ, CEROPHYTINÆ and PEROTHOPINÆ inhabiting the United States.

BY GEORGE H. HORN, M. D.

After the grand monograph of the Eucnemides completed by de Bonvouloir, in 1875, the present essay seems almost unnecessary, but to the vast majority of our students the book is inaccessible.

As might have been expected a small number of our species remained unknown to de Bonvouloir, which are in their correct places in the following pages, and in addition four have been described since, while ten new ones, besides, have been collected.

Regarding the status of the species treated there has been some difference of opinion. In the early days of the science the Eucnemides were considered Elateridæ and a number described as Elater, later in the posthumous work of Latreille we find them recognized as a tribe of Elateridæ. In a synopsis of the Eucnemides (Proc. Acad. 1852, p. 45) Dr. LeConte uses the following words: "Although many entomologists consider that the small group of Coleopterous insects herein treated constitute a peculiar family I am under the necessity, after very careful examination, of viewing them as a mere section of the extensive natural family of Elateridæ, and no more entitled to a distinct place in the series than any other group of genera in that family." The same ideas were repeated the next year in his "Revision of the Elateridæ" (Trans. Am. Philos. Soc. x).

It was not until 1857 that Lacordaire recognized the Eucnemidæ and Elateridæ as families of equivalent standing with the Buprestidæ. This view was finally adopted by Dr. LeConte in the first edition of the "Classification," and de Bonvouloir follows in accord excluding, however, Perothops from the Eucnemidæ as a troublesome element without definitely assigning it a place.

Realizing these difficulties it was suggested by me (Trans. Am. Ent. Soc. vii, 1879, p. xxi) that Cerophytum and Perothops should be isolated, and that the term Elateridæ should be so extended as to embrace the aberrant forms, those to be considered sub-families. The relations of these various series to each other are fully explained in the "Classification" of the Coleoptera of N. A. edit. 2, and need not here be dwelt upon.

The present essay purposes to deal with the three sub-families named, the Cebrioninæ having been already treated, and the Elaterinæ is of sufficient magnitude to require its being dealt with in a fragmentary manner, as has been begun in the last few years.

EUCNEMINÆ.

Head convex, mouth inferior, labrum absent, or very slightly visible; clypeus more or less inflexed, narrowed at its base by the insertion of the antennæ; prothorax movable, but less so than in the Elaterinæ; prosternum without lobe in front; hind coxal plates laminate.

The Eucneminæ may be divided into two tribes in the following manner:

Antennæ moderately distant; last joint of maxillary palpi acute; prosternal sutures and side margin parallel..... **Melasini.**
Antennæ approximate; last joint of maxillary palpi dilated; prosternal sutures and margin convergent..... **Eucnemini.**

Tribe MELASINI.

In this tribe the head is rather broad and less deeply inserted, so that the eyes are free and the mouth not applied against the prosternum.

Two genera are known.

Tibiæ broad, compressed..... **Melasis.**
Tibiæ slender..... **Tharops.**

MELASIS Oliv.

Form elongate, subcylindrical; antennæ not passing the middle of the thorax, distinctly pectinate ♂ or feebly so ♀; head rather large, moderately convex; clypeus feebly narrowed at base, apex emarginate at middle and sinuate each side; prothorax wider than long, anterior angles obtuse, the posterior acute and slightly prominent; lateral margin entire, but not prominent; prosternal sutures distant and parallel, the lateral marginal lines also nearly parallel with them; no antennal grooves on the under side of the thorax; metasternal episterna covered in front by the elytra, visible posteriorly, epimera concealed; hind coxal plates very broad internally, narrow externally; last ventral segment tubularly prolonged, with an ante-apical elevation, segments one to four slightly elevated at the middle of the posterior margin; legs rather short, the femora stout, the tibiæ flat and rather broad, terminated by a single spur; tarsi robust, rapidly attenuating, the first joint as long as the next three, all joints simple, claws simple.

Melasis and Tharops are considered by Bonvouloir to form a group apart from the other Eucnemides characterized by the parallel pros-

ternal sutures and the lateral margin of the thorax. In all the specimens of Melasis which I have examined I can find but one tibial spur, a character which seems to have escaped mention.

Two species are known to me from our fauna.

Third joint of antennæ ♂ nearly twice as wide as long, the fourth nearly three times; color piceous, or nearly black. .....**pectinicornis.**
Third joint of antennæ ♂ distinctly longer than wide, the fourth very little wider than long; elytra and antennæ rufo-ferruginous.....**rufipennis.**

As males only of the latter species are known to me I am unable to give characters separating the females.

M. pectinicornis Mels.—Form elongate, subcylindrical, piceous or black, opaque, sparsely clothed with extremely short grayish pubescence; antennæ barely attaining the middle of the thorax, brown or ferruginous, the first joint piceous, joints four to ten strongly ♂, or feebly pectinate ♀; eyes small, round, feebly convex; head coarsely, closely and roughly punctured, a slight impression of the vertex, more distinct in the male; prothorax broader than long, slightly narrowed posteriorly, the sides straight at middle, broadly ♂ or feebly ♀ arcuate at the front angle, rather deeply sinuate in front of the hind angles, which are acute and divergent ♂, or scarcely perceptibly sinuate, the angles not divergent ♀, disc convex, a distinct median impressed line deeper in the ♂, the surface coarsely punctured, with elevated granules; elytra slightly narrowing posteriorly, their apices acute, surface with rather deep punctured striæ, the intervals slightly convex, densely granulate and rugose; body beneath densely punctate; legs piceous, tibiæ and tarsi paler. Length .24 - .32 inch; 6 - 8 mm.

In the female the thorax is much more deeply emarginate in front and the head relatively smaller, the surface less rugose and the granulations of the thorax more distant.

Occurs from Pennsylvania to Texas, but very rare. For an opportunity of examining the female I am indebted to Mr. H. Ulke.

M. rufipennis n. sp.—Form elongate, subcylindrical, slightly narrowed behind, piceous, subopaque; pubescence fulvous, scarcely visible, elytra and antennæ rufo-ferruginous; antennæ attaining the middle of the thorax, the third joint nearly twice as long as the visible (in front) portion of the second, joint four triangular, broader than long, five to ten gradually more prolonged anteriorly, but less so than in *pectinicornis*; eyes small, round, feebly convex; head densely and rather coarsely punctate, not rough; clypeus slightly concave, front sometimes with a slight transverse carina; thorax a little wider than long, slightly narrower behind, sides straight, slightly arcuate at the apical angles and with a feeble sinuation in front of the hind angles, which are acute and slightly divergent; disc moderately convex, densely punctured and roughly granulate, with a narrow median smooth line very distinctly impressed posteriorly; elytra gradually narrowed posteriorly, the apices acute, disc deeply striate with coarse punctures, the intervals convex, densely punctured, but more shining than above; legs piceous, tibiæ and tarsi brown. Length .36 - .42 inch; 9 - 19.5 mm.

This species is evidently closely allied to *rufipalpis* Chev. from Mexico. The color is different, but this may be an accident, although I have seen three specimens from different localities taken in different years, all alike. In one specimen before me the transverse carina of the front is slightly distinct, in the other absent. The striæ of the elytra are coarsely punctured.

Occurs in Nevada and Washington Territory.

THAROPS Cast.

Form slender, subcylindrical, more or less narrowed posteriorly; antennæ slightly passing the hind angles of the thorax, flabellate from the fourth joint ♂; head moderately convex; eyes round, entire; clypeus slightly narrower at base, apex bisinuate; prothorax a little longer than wide, lateral margin entire; scutellum oval, truncate at tip; elytra striate, not entirely covering the abdomen; prosternal sutures straight, very nearly parallel with the lateral margin, the propleuræ not excavate for the antennæ; metasternal episterna very narrow in front, broader posteriorly, the epimera visible; posterior coxæ gradually wider internally, the posterior margin internally, truncate; legs moderate, tibiæ slender, tarsi filiform, the first joint as long as the next four, the fourth small and simple; claws simple.

This genus forms with Melasis a small group differing from the other members of the Eucneminæ in having the prosternal sutures and lateral margin of the thorax parallel, the two genera differing at first sight in the form of the tibiæ.

Two species are known in our fauna.

Elytra with inconspicuous pubescence..... .....**ruficornis.**
Elytra with dense silken pubescence forming a distinct design.....**nubila.**

T. ruficornis Say.—Form subcylindrical, slightly narrower posteriorly, piceous black, elytra variable in color, usually with an elongate, triangular, sutural, yellowish space, surface very inconspicuously pubescent; antennæ not passing the hind angles of the thorax, rufo-ferruginous; head coarsely and densely punctured, front above the clypeus slightly depressed ♂; clypeus narrowed at base, not wider than the distance to the eyes; thorax longer than wide, sides nearly parallel, slightly arcuate near the front angles, hind angles short, not carinate; disc moderately convex, median line ususally impressed, surface coarsely, moderately densely punctured; elytra striate, intervals slightly convex, moderately densely, roughly punctured; prothorax beneath rather coarsely, but not densely punctured; metasternum more densely; abdomen more finely and densely punctured, last ventral segment acute at tip; legs rufo-ferruginous. Length .14 - .32 inch; 3.5 - 8 mm.

Male.—Antennæ rufo-ferruginous, first joint rather robust, second small, partly concealed, third as long as the three following joints, joints four to ten short, each, however, gradually longer and narrower, furnished with a branch as long as the entire antennæ, eleventh as long as the branch of the tenth, but stouter; the middle of the posterior margins of the third and fourth ventral segments slightly elevated in a mucro.

Female.—Antennæ rufo-ferruginous, the basal joint sometimes darker; first joint stout, second small, partly concealed, third as long as the next two, fourth triangular, longer than the fifth, joints five to ten triangular, a little wider than the fourth, subequal in length, but gradually wider, eleventh oval, nearly as long as the next two; last ventral segment acute at tip, penultimate segment elevated at middle of posterior margin in a distinct mucro.

The males are usually smaller and more slender than the females, and have often a slight transverse impression of the middle of the thorax.

The median line of the thorax is a very variable character, often the line is rather deeply impressed posteriorly and ends abruptly, it may also continue slightly to the apical margin or be entirely wanting.

The elytra are variable in coloration. I have a specimen entirely piceous, another with a small spot at base on each side of the scutellum, from this the yellow space becomes gradually longer and may reach nearly to the apex.

The male does not seem to have been known to Bonvouloir, and very few of the other sex. I am entirely unable to separate two species in the large material I have examined. The males are much less frequent than the females.

Occurs from Canada and New Hampshire to Missouri and Virginia.

T. nubila Bonv.—Form elongate cylindrical, scarcely narrower behind, entirely black, moderately densely clothed with sericeous fine pubescence forming a distinct design; antennæ (rufo-testaceous?) wanting; head rugosely punctured; thorax as long as wide, sides straight posteriorly, slightly arcuate in front, disc convex a distinct depression of the median line posteriorly, very densely and finely punctate, surface in front marked with two rings of cinereous pubescence; elytra striate, striæ finely punctured, the intervals finely granulate toward the base, and slightly rugose posteriorly; covered with dense ashy-gray pubescence, forming a transverse band at middle, which is narrower at the suture, oblique each side in front, the apical fourth also densely pubescent with a small portion of the apex uncovered; under side of body entirely black, inner side of the posterior coxæ and legs ferruginous. Length .20 inch; 5 mm.

This species I have never seen. It is known to me by the description and figure given by Bonvouloir and a drawing made by Major LeConte from the same specimen.

The only specimen known was collected more than fifty years ago by Major LeConte in Northern Georgia and sent to Count Dejean.

Tribe EUCNEMINI.

The head is not very broad, the mouth resting against the anterior margin of the prosternum, the eyes at least in contact with the thorax often partly concealed.

The different genera present so many modifications of structure, while preserving the same general type, that it is unnecessary here to deal more fully with them as they more properly belong to the generic descriptions.

This tribe is the equivalent of the *Eucnemites propres* as defined by de Bonvouloir, and contains eighty-seven genera, twenty of which are represented in our fauna. Having less material to deal with than he, I have been enabled to modify the table of genera in such a way as to use characters more readily seen and to avoid exceptional cases. For the latter reason I have been compelled to avoid the use of the coxal plates near the beginning of the table, inasmuch as two species of Microrhagus have parallel coxal plates and might be supposed to belong to Hylochares.

The characters used in the following table seem not to require special explanation, in case of doubt reference should be made to the genera themselves.

Thorax with antennal grooves usually sharply limited, close to the lateral margin.....2.

Thorax without *marginal* antennal grooves.....8.

2.—Tarsi with joints 2–4 lobed beneath.....**Dendrocharis.**

Tarsi with the fourth joint, at most, slightly lobed.....3.

3.—Prosternal sutures arcuate.....**Stethon.**

Prosternal sutures straight.....4.

4.—Antennal groove continuing directly from the thorax to the head.....5.

Antennal groove more or less interrupted or narrowed by the eyes.....7.

5.—Metasternum with a fine groove, limited by finely elevated lines, prolonged backward from the outer side of the middle coxæ; propleural triangle small.....**Eucnemis.**

Metasternum without groove.....6.

6.—Antennal groove of thorax wide, at least equal to half the propleural triangle, usually wider behind.....**Deltometopus.**

Antennal groove narrow, not more than a fourth as wide as the propleural triangle, not wider behind.....**Dromæolus.**

7.—Antennæ slender, fourth joint of tarsi excavate-emarginate and slightly lobed beneath.....**Fornax.**

Antennæ short, clavate, fourth joint of tarsi simple...**Phaenocerus.**

8.—Lateral margin of thorax formed by two finely elevated lines, the one starting from the anterior margin and prolonged backward, the other from the hind angles becoming inferior; antennal grooves juxta-sutural.....9.

Lateral margin of thorax single, sometimes nearly entirely obliterated; under side of prothorax without antennal grooves, at most a faint longitudinal depression in the triangle.....10.

9.—Juxta-sutural groove very short, merely slightly indicated in front.
Adelothyreus.

Juxta-sutural groove entire.
Antennæ with second joint alone small.....**Microrhagus.**
Antennæ with joints two and three moniliform.
Entomophthalmus.

10.—Posterior coxal plates parallel or wider externally.....11.
Posterior coxal plates narrower externally.....12.

11.—Antennæ slender, filiform.
Third joint not longer than second.....**Xylobius.**
Third joint much longer than second.....**Hylochares.**
Antennæ bi-serrate ♀, or bi-pectinate ♂.....**Sarpedon.**

12.—Mandibles stout, rugose.....13.
Mandibles slender, not rugose.....14.

13.—Last ventral segment prolonged in a point.....**Nematodes.**
Last ventral segment obtuse at tip.....**Hypocoelus.**

14.—Prosternal sutures straight; lateral margin of thorax distinct.....15.
Prosternal sutures arcuate; lateral margin almost obliterated.....17.

15.—Clypeus very deeply sinuate each side.....**Schizophilus.**
Clypeus regularly arcuate in front.....16.

16.—Coxal plates suddenly broader internally; last four joints of antennæ abruptly longer.....**Epiphanis.**
Coxal plates gradually broader internally.
Last three joints of antennæ abruptly longer.....**Phlegon.**
Outer joints of antennæ shorter.....**Cryptostoma.**

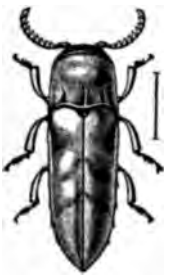
17.—Clypeus arcuate in front: coxal plates abruptly wider at inner third; antennæ with joints 4–10 moniliform.....**Anelastes.**

DENDROCHARIS Guérin.

Form cylindrical, rather robust; antennæ rather short, first joint moderately elongate, second very short, third longer, joints four to ten strongly dentate, eleventh oval, acute; head large, deeply inserted, eyes slightly emarginate; clypeus very little narrowed at base; prothorax wider than long, lateral marginal line entire; prosternal sutures straight, propleural triangle wider than long, with a deep and well defined groove to receive the antennæ along its outer border; metasternum with an oblique groove on each side beginning at the posterior margin of the middle coxæ directed obliquely backward and to the outer side; episterna distinctly wider behind, the epimera not visible; posterior coxal plates broader externally; legs moderately robust, the tibiæ broader toward the tip; posterior tarsi shorter than the tibia, the first joint small, equal to the second, joints 2–3–4 each with a rather long membranous lobe beneath, the fourth not dilated nor enlarged, last joint as long as the preceding three; claws slightly broader at base.

Regarding this genus Bonvouloir very justly remarks that it presents so many strange characters that it is difficult to assign it a place. In the genera Gastraulacus and Temnillus the same metasternal grooves are observed, but the structure of the tarsi is similar to that of Agastocerus and Galba. A certain relationship also with Dromæolus must not be lost sight of.

D. flavicornis Guérin.—Form cylindrical, moderately robust, attenuate at posterior third only, dark brown, opaque, moderately densely clothed with yellowish cinereous pubescence; antennæ yellowish in color, scarcely passing the hind angles of the thorax; head densely roughly punctured, front rather flat, a distinct rounded depression between the bases of the antennæ; clypeus very little narrower at base, the anterior border truncate at middle; thorax broader than long, sides nearly straight, very little narrower in front, slightly arcuate at the anterior angles, disc moderately convex, with a slightly marked line at the middle of the base and on each side a short oblique impressed line, surface rather densely rugose; elytra narrower at apical third, without traces of striæ, but with feeble traces of oblique impressions, surface densely rugose, but more finely than the thorax; prothorax beneath densely rugose, the metasternum and abdomen less coarsely rugose; last ventral segment compressed on each side terminating in an obtuse point. Length .32–.48 inch; 8–12 mm.



The only specimen I have ever seen of this species is in the cabinet of Dr. LeConte, obtained by him from some European collection. It seems to be excessively close to *bombycina* found in Columbia, S. A., and this in conjunction with the fact that forty-two years have elapsed since its description without others having been found, makes me look upon the species as rather doubtful.

Occurs at Savannah (Bonvouloir).

STETHON Lec.

Form cylindrical, rather robust, slightly narrower behind; antennæ very little longer than the head and thorax, compressed, differing in the two species in the proportions of the joints; head convex, deeply inserted; clypeus very little narrowed at base, much broader than the distance to the eyes, apical margin truncate, or feebly emarginate; prothorax wider than long; elytra parallel, narrowed at apical fourth; prosternum rather short in front of the coxæ, the sutures deeply impressed, distinctly arcuate (*pectorosus*), or very feebly arcuate (*erraus*), propleural triangle nearly equilateral, the antennal grooves marginal, deep, narrow, closed behind and with parallel sides; metasternal episterna very narrow, parallel; a slight longitudinal impression beginning at the outer side of the coxæ; hind coxal plates broad and dilated internally; legs moderate, tarsi filiform, the first joint as long or longer than the next four, fourth joint simple; claws simple; last ventral segment more or less prolonged at apex.

With the typical species (*pectorosus*) above there would be no difficulty in easily distinguishing the genus from almost every other in the Eucnemine series by the strongly arcuate prosternal sutures, but the second species shows a strong tendency to revert to the form usual in the series. Excluding the prosternal sutures from considera-

tion the genus is closely related to Dromaeolus, from which it differs in the simple tarsi and very broad clypeal base. The eyes do not narrow the antennal groove.

S. pectorosus Lec.—Form robust, cylindrical, slightly narrower behind, brown or piceous, subopaque, pubescence extremely short and sparse; antennæ not extending beyond the hind angles of the thorax, flattened, first joint stout, as long as the next three, second small, partly concealed, third one and a half times the length of the fourth, joints 4–10 gradually very little shorter, the outer joints a little wider than long, eleventh oval longer than the tenth; head convex, coarsely and densely punctured; clypeus twice as wide at base as the distance to the eyes, apex very slightly emarginate; thorax a little longer than wide, sides arcuate in front, straight and parallel posteriorly, hind angles rather obtuse, not carinate, a slight depression along the lateral margin, disc convex, sometimes slightly flattened along the middle with a shallow, but broad depression deeper posteriorly and sometimes smoother, surface densely and rather rugosely punctured; elytra striate, the intervals convex in their entire length, densely rugosely punctured; prosternum coarsely but very sparsely punctured, the triangle more coarsely and densely; metasternum coarsely, but sparsely punctured; coxal plates and abdomen more finely and densely; hind tarsi with the first joint as long as the next four. Length .30 - 32 inch; 7.5 - 8 mm.

As observed by Bonvouloir this species has considerable resemblance in form and sculpture to *Hylochares nigricornis*.

Occurs in Ohio, Illinois and Missouri. A specimen in my cabinet was collected under the bark of Shellbark Hickory.

S. errans n. sp.—Form cylindrical, slightly narrower at apical third, color ferruginous brown, feebly shining, very distinctly clothed with short fulvous pubescence; antennæ as long as the hind angles of the thorax, the first joint stout, as long as the next three, second small partly concealed, but as long as the fourth, third as long as the next two and more than twice as long as wide, joints 4–10 subequal in length, but gradually more slender, eleventh nearly as long as the preceding two; head convex, densely punctured, a distinct carina extending from the base of the clypeus to the occiput; clypeus very little narrowed at base, not twice as wide as the distance to the eyes, apical margin truncate; thorax a little wider than long, sides arcuately narrowed in front, very slightly arcuate posteriorly, the hind angles short, a distinct submarginal groove; disc convex, very slightly flattened at middle, a very vague median depressed line, surface densely punctured, on the deflexed sides more sparsely; elytra vaguely substriate, the surface moderately densely subrugosely punctured; prothorax beneath coarsely, but not densely punctured, the triangle more opaque; metasternum coarsely not densely punctured; abdomen more finely and densely; first joint of hind tarsi three-fourths the length of the tibia and longer than the next four joints. Length .28 inch; 7 mm.

The characters in which this species differs from *pectorosus* might almost be considered generic but I prefer to consider them allowable modifications within the genus rather than to increase the already

considerable number of feebly separated genera. The modifications alluded to are in the very feebly arcuate prosternal sutures, the antennæ and the hind tarsi. In form and color this species resembles *Microrhagus impressicollis*, but the pubescence is more evident.

One specimen, Florida.

EUCNEMIS Ahrens.

Form oblong, moderately robust; antennæ passing very little the hind angles of the thorax, first joint moderately long, second small, third longer than the fourth, joints 4–10 transverse, dentate, the eleventh longer, oval and acute at tip; head deeply inserted, eyes oval, entire, not narrowing the antennal groove; clypeus distinctly narrowed at base (*capucina*), or scarcely so (*americana*), strongly inflexed, the apical margin distinctly sinuate at middle (*capucina*), or broadly emarginate (*americana*), front carinate; prothorax broader than long, narrower in front, hind angles slightly prolonged, not carinate; elytra obsoletely substriate; prosternal sutures straight, but deeply impressed; propleural triangle broad, the outer side a little longer than the basal, the antennal groove deep, limited externally by the margin of the thorax; metasternum with an impressed line beginning at the outer side of the middle coxæ and extending directly backward nearly to the posterior margin and becoming gradually finer, another elevated line extends from the humeral angle of the metasternum and is directed obliquely backwards and inwards; metasternal episterna narrow and parallel; posterior coxal plates triangularly dilated; legs rather short, tarsi slender, the first joint of the posterior nearly as long as the next four together, the fourth joint simple; claws simple.

For the first time this genus as restricted by Bonvouloir is indicated in our fauna. It resembles Deltometopus and Dromæolus in many of its characters, but may be distinguished from either by the metasternal characters and slender tarsi.

One species is known in our fauna.

E. americana n. sp.—Piceous black, moderately shining, sparsely clothed with short grayish pubescence, form oblong, slightly narrower posteriorly; antennæ ferruginous brown, the first joint darker; head convex, moderately densely punctate, a distinct carina extending from the apical margin of the clypeus to the occiput; clypeus more coarsely punctate, very little narrowed at base and slightly wider than the distance to the eyes; thorax wider than long, narrower in front, the sides feebly arcuate posteriorly, more so in front, disc convex, a slight depression at middle posteriorly and feebly along the basal margin, surface rather finely not densely punctate; elytra vaguely substriate, the surface punctured similarly to the thorax and somewhat rugose along the base, sutural stria fine and entire; body beneath rather coarsely but not densely punctured, the abdomen rather more finely punctured; last ventral segment obtuse at tip, a slight transverse impression each side near the apical margin; legs brownish. Length .24 inch; 6 mm.

The specimen from which the above description has been drawn is in my cabinet, from near Mt. Shasta, California. There is a second

specimen in the cabinet of Dr. LeConte somewhat smaller, the sides of the thorax a little more oblique and the disc of thorax more sparsely punctate; this I am unwilling on the one specimen to separate it with another name notwithstanding the fact that it is labeled Kentucky.

E. americana resembles *capucina* in form and color and seems to differ only in the characters noted in the generic description.

DELTOMETOPUS Bonv.

Form elongate, moderately convex, gradually narrower posteriorly; antennæ moderately elongate, shorter in the female; head convex, rather deeply inserted; clypeus narrower at base than the distance to the eye, the anterior border arcuate, with a slight sinuation at middle; prothorax as long as wide, differing in form in the two sexes; elytra gradually narrower to apex, striate; prosternal sutures divergent, triangle of propleuræ longer than wide, the antennal groove deep, limited externally by the lateral margin, and not interrupted on the head by the eyes; metasternal episterna nearly parallel, very slightly wider behind, the epimera not visible; hind coxal plates gradually, but not greatly dilated internally; last ventral segment obtuse; legs rather short, first joint of hind tarsi as long as the next three, the fourth slightly dilated, excavated above and slightly lobed beneath, claws simple.

The differences between this genus and Dromæolus are rather feeble. In the latter the antennal grooves are narrow and not much than one-fourth the width of the base of the propleural triangle, while in Deltometopus the grooves posteriorly are one-half the width of the triangle.

Two species occur in our fauna.

Antennæ not as long as half the body, pectinate in the ♂ serrate ♀, the antennal groove distinctly wider behind ..... **amœnicornis.**

Antennæ longer than half the body ♂, nearly half as long as body ♀, filiform in both sexes, antennal grooves very broad, not narrowed in front, apparently widest at middle ..... **rufipes.**

D. amœnicornis Say.—Form moderately elongate, gradually narrowed behind, piceous, feebly shining, sparsely clothed with grayish pubescence; antennæ not reaching the half of the body, piceous or with the second and third joints testaceous in ♂, first joint rather stout, second small, third three-fourths as long as the first, fourth triangular, broader and more acute ♂, joints 5–10 pectinate ♂, the branches longer than the joint and gradually longer externally, the eleventh joint slender, longer than the branch of the tenth, joints 5–10 ♀ serrate, the tenth oval, acute, as long as the two preceding; head densely punctate, front slightly concave, the interocular carina interrupted at middle and slightly turned downward to the base of the clypeus, but entirely absent in the female; thorax a little wider than long, narrower in front ♂ with the sides straight, slightly arcuate near the front angles; in the female the thorax is widest one-third behind the apex, the sides in front arcuate, posteriorly straight and

slightly converging, disc convex, moderately densely punctate, hind angles not carinate; elytra striate, intervals slightly convex, rather densely rugosely punctate; body beneath coarsely, but not densely punctate; abdomen more finely and closely; legs ferruginous, brown. Length .12 - .18 inch; 3 - 4.5 mm.

The males are usually smaller and more slender than the females and the form is so obviously different that it is not remarkable that Say described them as distinct.

In distribution the species is widely diffused, occurring from the N. E. States to Texas.

I have examined the type of *D. ereptus* Bonv. in the cabinet of my friend Sallé, and find that it is merely an *amœnicornis* with the branch broken from the fifth joint of the antennæ. May not *Euonemis monilicornis* Mann. be the female of *amœnicornis*?

Closely related to *amœnicornis* is *foveolatus* Guér. from Mexico. Bonvouloir appears to have seen but one ♀ in which there were two transverse foveæ on the disc of the thorax. These seem not to be always present and therefore of no value in separating the two species. I find, however, that the marginal sulcus is quite well marked in the ♀ and will serve to distinguish both sexes from *amœnicornis*.

D. rufipes Mels.—Form oblong, rather slender ♂, stouter ♀, brown or piceous, slightly shining, sparsely clothed with cinereous pubescence; antennæ paler brown, two-thirds the length of the body and slender ♂, less than half the length of body and stouter ♀, joint second shorter, but equal to the fourth, third nearly as long as the next two, joints 5 - 10 slender, gradually longer, the eleventh one and a half times as long as the tenth; in the female joints 4 - 10 are nearly equal in length, very little longer than wide, the eleventh nearly as long as the two preceding; head convex, coarsely and deeply punctate, front rather deeply depressed above the base of the clypeus, the frontal carina broadly interrupted at middle; clypeus very coarsely punctate, very narrow at base, less than half the distance to the eyes; thorax slightly broader than long, narrower in front, but less so in the female, sides posteriorly straight, in front arcuate, hind angles very little prolonged, not carinate; disc convex, moderately coarsely and closely punctate, a very slight median line ♀ not evident in the ♂; elytra gradually narrower at apical third, the disc vaguely substriate near the base, surface more finely and sparsely punctate than the thorax; body beneath coarsely and closely punctate; legs rufo-ferruginous. Length .14 ♂ - .22 ♀ inch; 3.5 - 5.5 mm.

Since my attention has been called to this species by the studies preliminary to the present essay, it has given me nearly as much trouble as my notes concerning it appear to have caused Bonvouloir.

In comparing this species with *amœnicornis* two very striking differences have been observed; first, in the form of the antennæ and second in the antennal grooves. The unusual length of the antennæ ♂ has, however, a parallel in *fallax*, a Brazilian species, and may

and may therefore be dismissed from further consideration. In all the species of *Deltometopus* the antennal groove is distinctly wider behind. In *rufipes* the groove is fully as wide as the small propleural triangle and not wider behind but, if anything, widest opposite the middle of the propleural triangle. The width of the groove is such that the outer apical angle of the prosternum is cut off by it.

Two specimens, Canada.

DROMÆOLUS Kies.

Form slender, subcylindrical, usually narrower posteriorly; antennæ filiform, or very feebly serrate, usually more slender to the tip; head convex, deeply inserted, eyes convex, not encroaching upon the antennal groove; clypeus narrowed at base, inflexed, the apical margin usually truncate at middle, sinuate each side; mandibles robust, the exposed surface large and rugose; prothorax variable in form, usually not longer than wide; prosternal sutures distinct, usually deep, slightly divergent, the propleural triangle always longer than wide at base, the antennal grooves narrow, parallel, open behind, usually deep and sharply limited, rarely (*basalis* and *nitens*) shallow and not limited internally; metasternal episterna parallel, the epimera invisible; hind coxal plates gradually wider internally; legs moderate; hind tarsi with the first joint variable, at least as long as the next three joints, the fourth excavate emarginate above and slightly lobed beneath; claws simple.

This genus and Fornax are very closely related, the only constant difference being that the larger eyes of the latter narrow the antennal groove at its entrance on the head. This character is, however, difficult to realize at times, so that I have doubted whether *salnus* should really be retained in the present genus.

This genus is represented on both sides of the continent, the species are as follows:

Interocular carina entire, extending across the base of the clypeus. **californicus.**

Interocular carina interrupted at middle ..... 2.

2.—Clypeus at base half as broad as the apical margin ..... 3.

Clypeus at base very narrow ..... 8.

3.—Body above brown ..... 4.

Body above black ..... 5.

4.—Mesopleuræ punctured at base and externally (second joint of antennæ shorter than the fourth *Bonv.*) ..... **sejunctus.**

Mesopleuræ punctured over the entire surface; second joint of antennæ longer than the fourth ..... **salnus.**

5.—Marginal grooves of thorax shallow, not sharply limited internally ..... 6.

Marginal grooves deep, sharply limited ..... 7.

6.—Propleural triangle fully twice as long as wide; upper surface shining, pubescence very sparse and inconspicuous ..... **niteus.**

Propleural triangle not twice as long as wide; upper surface opaque, elytra with paler pubescence at basal third ..... **basalis**

7.—Elytra deeply striate, surface roughly sculptured, the punctuation of the abdomen coarse, the pubescence inconspicuous..... .....**striatus.**
Elytra faintly striate, punctuation not rough, the abdomen rather densely and finely punctured, the pubescence conspicuous.....**Harringtoni.**
Elytra without striæ, punctuation not rough, the abdomen coarsely punctured, pubescence very sparse..... ....**cylindricollis.**

8.—Color brown, antennæ shorter than half the body, propleural triangle twice as long as wide; elytra finely striate ....**Marseuli.**
Color piceous, antennæ half as long as the body, propleural triangle not twice as long as wide; elytra not striate..... .....**pusillus.**

D. californicus Bonv.—Form oblong, moderately robust, color nearly black, subopaque, sparsely clothed with short brownish pubescence; antennæ not extending beyond the hind angles of the thorax, filiform and rather compact, second joint distinctly longer than the fourth, third as long as the next two, fourth and fifth very little longer than wide, 6 - 11 gradually longer; head convex, the punctuation dense, slightly rugose, but not very coarse, the interocular carina extending distinctly across the base of the clypeus; clypeus narrower at base than half the apex and equal to half the distance to the eyes; thorax as long as wide, the sides posteriorly parallel, or feebly arcuate, anteriorly arcuately narrowed to the front, disc convex, a very feebly impressed median line almost obsolete in front, surface coarsely, densely and subrugosely punctured; elytra distinctly striate, the intervals feebly convex, densely subrugosely punctured, but less coarsely than the thorax; prosternum coarsely, but sparsely punctate, the sutures straight, open in front, the triangle one and a half times as long on the outer side as wide at base; antennal grooves deep, sharply limited; metasternum and abdomen coarsely and moderately densely punctured, last ventral segment not prolonged in a point; legs brownish; tarsal claws simple. Length .36 - .40 inch; 9 - 10 mm.

This species has the most robust facies of any in our fauna and may be at once known by its subopaque black color and the entire interocular carina. By the table given by Bonvouloir it is plainly related to *ischiodontoides*, from which it differs in color and form of its thorax. In comparing the above description with that by Bonvouloir several unimportant differences will be observed. The type is in my cabinet.

Two specimens, California.

D. sejunctus Bonv.—Form straight, slightly attenuate posteriorly, reddish brown, clothed with short yellowish pubescence; antennæ slender, ferruginous, not as long as half the body, second joint shorter than the fourth, third distinctly longer than the fourth, joints 5 - 10 longer than wide, gradually longer, the eleventh one-half longer than the tenth; head convex, punctuation fine, rather dense, scarcely rugose, interocular carina broadly interrupted at middle; clypeus at base half as wide as the apex; thorax a little wider than long, sides posteriorly straight and parallel, anteriorly feebly arcuate, disc convex, a small fossa on each side of the middle of base, a feeble median line near the base which becomes obliterated, and is again evident in front without, however, reaching the middle, the punctuation not coarse nor very dense, slightly rugose near the sides; elytra finely striate,

striæ finely, moderately densely punctate; body beneath finely and densely punctate, a little coarser on the prosternum; antennal groove sharply defined, not wider posteriorly, the propleural triangle with the outer side twice as long as the base; mesopleuræ with few punctures at base and externally; legs and tarsi ferruginous. Length .36 inch; 9 mm.

I have in my collection a specimen which I think must be referred to this species, but I do not observe the median depressions of the thorax mentioned in the above description. These are, however, faint in the type and are a variable quantity, so that I do not attach any importance to their absence. The facies of the species is very deceptive and not unlike *Fornax bicolor*. In addition to the characters given by Bonvouloir I observe that the last joint of the tarsi is extremely slender and the claws very small, feebly curved and simple. My specimen is .42 inch; 10.5 mm. long.

Collected near Canandaigua, New York, by l'abbe de Marseul, and on Long Island by Mr. Wm. Jülichs.

D. salsus Bonv.—"This species is so like the preceding that I hesitated a long time before separating it; so that it will be necessary to mention only the differential characters. The pubescence is more silken and of a golden reddish color; the head more coarsely, densely and roughly punctured; the clypeus wider at base and the apex is not twice as wide; the front is slightly impressed at middle anteriorly; the thorax is very nearly as long as wide, the sides slightly sinuate, the punctuation coarser, denser and more rugose, the base on each side of middle more depressed and with a small median groove, which is interrupted, attaining the middle in front; the intervals of the striæ are distinctly rugose transversely; the mesopleuræ are entirely punctured with coarse impressed punctures. Length .38 inch; 9.5 mm.

The above is nearly a literal translation of Bonvouloir's remarks, which I have thought advisable to repeat in order that the preceding species may be more readily known. I observe, however, that the second joint of the antennæ is much longer than the fourth, the third as long as the next two, the fourth is short, not as long as wide, joints 5 – 10 gradually very little longer, eleventh longer and acute at tip.

I am indebted to my friend Sallé for the privilege of examining the type of this species, collected by him in Louisiana.

D. nitens n. sp.—Form oblong, parallel, narrowed only at apical third, color black, moderately shining, the pubescence extremely short and inconspicuous; antennæ piceous, extending slightly beyond the hind angles of the thorax, slender, scarcely at all serrate, second joint as long as the fourth, third as long as the next two, 4 and 5 equal, 6 - 8 equal, distinctly longer, 9 and 10 equal, scarcely longer than 4 and 5, eleventh one and a half times as long as the tenth; head convex, without interocular carina, moderately densely, but not roughly punctured; cly-

peus broad at base, equal to half the apex, and nearly as wide as the distance to the eyes; thorax a little longer than wide, sides posteriorly nearly straight, arcuate at apical third, disc moderately convex, at base a moderately broad triangular depression, at the bottom of which the median line is distinctly impressed and extends forward to the middle becoming gradually obsolete, surface moderately densely punctate, distinctly rugose at the sides; elytra faintly striate at the base and sides, the surface more finely and sparsely punctate than the thorax; body beneath moderately densely punctate, more sparsely and coarsely in front; propleural triangle twice as long on the outer side as wide at base, the antennal groove shallow, deeper in front, not sharply limited internally; mesopleurae sparsely punctate in front and externally; legs piceous, tarsi brown. Length .38 inch; 9.5 mm.

This species and the next are remarkable in having the antennal grooves badly limited on their inner side. The present species is more shining and with almost invisible pubescence. In general appearance it resembles *cylindricollis*, but is larger and less convex.

Occurs in Oregon and Washington Territory.

D. basalis Lec.—Form moderately elongate, slightly attenuate posteriorly, black, subopaque, clothed with very short brown pubescence, but with the basal third of the elytra more densely clothed with longer, yellowish cinereous pubescence; antennæ dark brown, slender, filiform, slightly longer than to the hind angles of the thorax, second joint as long as the fourth, third a little longer than the next two, four to ten gradually longer, eleventh nearly as long as the two preceding; head convex, densely and rather roughly punctured; clypeus as broad at base as half the apex and nearly as wide as the distance to the eyes; thorax as broad as long, sides posteriorly straight, arcuately narrowing at apical third, disc moderately convex, a vague depression at the middle of the base, median line feebly impressed extending forward nearly to the middle, surface very densely punctured and at the sides rugose; elytra substriate, the surface moderately densely punctured, more finely than on the thorax; body beneath more sparsely and more finely punctured than above, the punctures of the prosternum coarser; triangle of the propleurae not twice as long as wide at base, the antennal groove shallow and scarcely at all limited internally; mesopleurae sparsely punctate; legs brown, the femora darker. Length .24 - .34 inch; 6 - 8.5 mm.

The antennal grooves are even more shallow than in *nitens*, a character which seems to have been entirely overlooked by Bonvouloir. The paler pubescence forms a broad band at the base of the elytra and becomes gradually wider externally.

The very shallow and feebly limited antennal grooves of these two species seem to indicate some relationship with those species of Nematodes in which there is a beginning of an antennal groove near the front angle of the thorax.

This species occurs in the mountainous regions of Northern California and Nevada.

D. striatus Lec.—Form moderately elongate, gradually narrower posteriorly, black, subopaque, sparsely clothed with short yellowish gray pubescence, sometimes more conspicuous on the thorax and base of elytra; antennæ not passing the hind angles of the thorax, slender, second joint longer than the fourth, third equal to the next two, joints four to ten gradually longer, eleventh one and a half times the length of the tenth; head coarsely and rather roughly punctured, the interocular carina not reaching the clypeus; the latter at base half as wide as at apex, nearly as wide as to the eyes; thorax distinctly longer than wide, sides parallel, or very slightly arcuate, in front arcuately narrowing to the apex, disc moderately convex, a distinct depression at the middle of the base, in which the median line is very deeply impressed one-third toward the apex, surface densely punctured, more roughly toward the sides; elytra deeply striate, the intervals slightly convex, rather coarsely and roughly punctured; prosternum moderately not densely punctured; the propleural triangle twice as wide as long at base, the antennal groove deep, narrow, sharply limited; mesopleuræ sparsely punctate; metasternum very coarsely sparsely punctate; abdomen with a coarse not dense punctuation, the pubescence very sparse; legs piceous, the tibiæ and tarsi somewhat paler. Length .22 - .34 inch; 5.5 - 8.5 mm.

This species is rather more robust, the sculpture more rugose than either of the next two species and differs also in the elytra much more deeply striate.

It seems to be the analogue in the Atlantic region of *californicus* in the Pacific as *cylindricollis* is of *nitens* and *Harringtoni* of *basalis*.

Occurs from New York to Florida, but is more essentially a Southern species.

D. Harringtoni n. sp.—Form elongate, moderately convex, slightly narrower posteriorly, black, shining, sparsely clothed with cinereous yellow pubescence, more conspicuous on the thorax and base of elytra; antennæ slender, passing slightly the hind angles of the thorax, feebly subserrate, second joint as long as the fourth, third not quite as long as the next two, joints four to ten longer than wide and gradually more elongate, eleventh one-half longer than the tenth; head convex, densely punctured, a distinct transverse frontal impression, interocular carina broadly interrupted at middle; clypeus as wide at base as half the apex and wider than half the distance to the eyes; thorax longer than wide, sides posteriorly straight, but slightly convergent, anteriorly slightly arcuate, disc moderately convex, a slight triangular depression posteriorly, the median line finely impressed one-third to the front, surface not coarsely nor densely punctured at middle, more densely at the sides, but not rugose; elytra substriate, the punctuation a little coarser and closer than on the middle of the thorax; prosternum rather closely finely punctate, the triangle more coarsely, its outer side not twice as long as base, the antennal groove deep, narrow and sharply limited; mesopleuræ coarsely sparsely punctate; metasternum coarsely punctured, the punctuation somewhat longitudinally strigose; abdomen densely rather finely punctate, the pubescence rather dense; legs piceous. Length .22 - .24 inch; 5.5 - 6 mm.

The elytral sculpture is about intermediate between *cylindricollis* and *striatus*, otherwise the sculpture of the surface resembles the for-

mer, but is finer. The median basal depression is smaller than either of those and the median line is not deeply impressed. The punctuation of the abdomen is much finer and its pubescence denser, so that in certain lights it obscures the punctuation. I have no doubt but that this species is mixed in most collections with *striatus* as a smoother variety.

I have named this species in compliment to Mr. W. H. Harrington, of Ottawa, to whom I am indebted for the kind loan of material on several occasions.

Occurs in New York and Canada.

D. cylindricollis Say.—Form elongate, moderately convex, slightly narrower posteriorly, black, shining, sparsely clothed with very inconspicuous yellowish hair; antennæ not extending beyond the hind angles of the thorax, piceous, subserrate, second joint longer than the fourth, third as long as the next two, joints four to ten longer than wide and gradually longer, eleventh one-half longer than the tenth; head convex, coarsely and densely punctured, interocular carina broadly interrupted at middle; clypeus at base half as broad as at apex, but not more than half the distance to the eyes; thorax longer than wide, sides straight and parallel posteriorly, obliquely convergent at apical third, disc moderately convex, a median depression at base, the median line very deeply impressed one-third from the base to the front, surface not very densely punctured at middle, more densely at the sides, but scarcely rugose; elytra with the sutural stria extending two-thirds from apex to base, the surface otherwise moderately coarsely but not very densely punctured and not rugose; prosternum rather finely not closely punctured, the triangle more coarsely and closely, the outer side twice as long as the base, the antennal groove narrow, deep and sharply limited; mesopleuræ obsoletely punctate; metasternum and abdomen coarsely and rather densely punctured; legs piceous. Length .28 - .34 inch; 7 - 8.5 mm.

This species is readily known by the entire obliteration of the elytral striæ except the sutural.

Occurs from Canada to Georgia.

D. Marseuli Bony.—Form subcylindrical, slightly narrower posteriorly, bright reddish brown, moderately densely clothed with short yellowish pubescence; antennæ not as long as half the body, filiform, second joint equal to the fourth, third as long as the next two, joints 5 - 10 at least twice as long as wide, gradually longer, eleventh longer than the tenth and slender; head convex, moderately densely and slightly rugosely punctate, interocular carina broadly interrupted at middle; clypeus very narrow at base, not more than a fourth of the apex and scarcely a half the distance to the eyes; thorax as long as wide, sides posteriorly straight and parallel, anteriorly arcuate and narrowed to the front, on each side of the middle of base a small fossa, median line not impressed, surface rather slightly punctate, denser and subrugose at the sides; elytra finely striate, the intervals finely not densely punctate, slightly rugose on the sides; body beneath a little darker than above, finely and densely punctate, more

sparsely on the prosternum; marginal groove deep, not wider behind, triangle of the propleuræ almost twice as long on the outer edge as at base; legs bright reddish brown. Length .30 inch; 7.5 mm.

This species is also unknown to me in nature. From the description it seems to resemble very closely *Fornax badius*.

Collected at Canandaigua, New York, by l'abbé de Marseul.

D. pusillus n. sp.—Form oblong, rather slender, distinctly narrower behind, piceous black, moderately shining, sparsely clothed with short brownish pubescence; antennæ ferruginous, a little darker externally, as long as half the body, second joint a little shorter than the fourth, third a little longer, joints four to ten feebly serrate, all longer than wide, gradually longer, eleventh more slender, nearly as long as the preceding two; head convex, moderately densely punctate, interocular carina interrupted at middle; clypeus very narrow at base, less than one-fourth the apex and a third the distance to the eyes; thorax broader than long, sides feebly sinuate and gradually narrowed from the base to the apex, disc convex, a slight fovea each side of middle of base, median line a little smoother posteriorly and slightly elevated, surface coarsely not densely punctured at middle, more densely and roughly at the sides; elytra with a fine sutural stria and vague traces of striæ in the basal depression, the surface a little less densely and less coarsely punctured than the thorax; body beneath rather coarsely and moderately densely punctured, outer side of triangle of propleuræ one and a half times the length of the base; antennal groove deep, sharply limited, not more than a third the width of the triangle; mesopleuræ very sparsely punctured; tibiæ and tarsi ferruginous, femora darker. Length .14 inch; 3.5 mm.

This little species has a facies totally different from all the Dromæolus in our fauna. It is of the size and form of the male of *Deltometopus amœnicornis*, and it would have been placed in that genus in relation with the Brazilian *fallax*, except that the antennal grooves are as in Dromæolus. The triangle of the propleuræ is not, however, as long as is usual in the latter genus. Considering the extremely close relationship of the genera Deltometopus, Dromæolus and Fornax, this species is better placed in the second. It is much the smallest species in our series and is equaled in this respect by *dilutipes* and *Funckii*, both of which belong to the series with the prosternal sutures closed in front. By the table given by Bonvouloir the species would be placed near *frater* and *propinquus*, both of which are comparatively large species and differ otherwise.

A specimen, female, in the cabinet of Dr. LeConte has the thorax larger, that is, the sides are less narrowed to the front and more arcuate, differing, in fact, from the male as the two sexes of *Deltometopus amœnicornis* differ.

One specimen, ♂, Northern Illinois, kindly given me by Mr. Fred. Blanchard, a ♀ in cabinet of Dr. LeConte from Texas.

FORNAX Cast.

Form variable, but usually oblong, and more or less cylindrical; antennæ variable in length, usually serrate; head convex, deeply inserted, the eyes moderately large and encroaching upon that part of the antennal groove extending on the head; clypeus narrowed at base, but variably, the apical margin truncate at middle, sinuate each side; mandibles presenting a rather broad rugose face; prothorax of variable form, usually narrowed in front, the hind angles more or less prolonged; prosternal sutures distinct, slightly divergent, the triangle broad, usually as broad at base as long, the antennal grooves deep, sharply limited on each side, much narrower than the triangle, usually parallel (wider in front in *infelix*); elytra striate; metasternal episterna moderate, parallel, the epimera not visible; hind coxal plates widely dilated internally; last ventral segment obtuse; tarsi filiform, the first joint of the posterior pair as long as all the others, the fourth broader, excavate above and slightly lobed beneath; claws toothed in the larger species, simple or slightly broader in the smaller.

The species of this genus are confined to the Atlantic region of our fauna, and are of rather homogeneous aspect. It is very closely related to Dromæolus, and separated by characters which seem inclined to be evanescent. The only species possessing remarkable characters is *infelix*, these are alluded to in the description.

The characters of the following table will readily distinguish our species:

Second joint of antennæ as long, or very nearly as the fourth..... 2.
Second joint small, not half as long as the fourth.....3.
2.—Front without trace of interocular carina; color pale castaneous..**basalis.**
Front transversely carinate between the eyes; color piceous.....**Hornii.**
3.—Epipleuræ not grooved.....4.
Epipleuræ grooved and smooth.....5.
4.—Interocular carina entire, color piceous; species small.....**calceatus.**
Interocular carina wanting; species large.....6.
5.—Antennæ slender, not serrate; interocular carina extending slightly on the base of the clypeus.....**bicolor.**
6.—Lateral margin of thorax single.
Antennæ serrate on joints 4 - 8, the last three more slender and not serrate.....**molestus.**
Antennæ serrate on joints 4 - 10, the last joint alone slender.
orchesides.
Lateral margin of thorax double.
Antennæ a little shorter than half the body and feebly serrate.**infelix.**

F. badius Mels. Form moderately elongate, somewhat narrower posteriorly, castaneous brown, feebly shining, clothed with short fulvous pubescence; antennæ slender, a little longer than the head and thorax, first joint moderately stout, slightly arcuate, as long as the three following, second a little longer than the fourth, third nearly as long as the next two, fourth a little shorter than the fifth, joints 5 - 10 nearly equal, eleventh a little longer; head convex, with a moderate, but dense punctuation; clypeus half as wide at base as at apex, the

base about equal to the distance to the eyes; thorax a little longer than wide, slightly narrowed in front, the sides nearly straight, slightly arcuate in front, disc convex, moderately, coarsely and densely punctate; elytra finely striate, the intervals flat, moderately densely punctate, slightly rugose at base; body beneath moderately densely punctured, the punctuation finer than above; antennal groove deep, sharply limited; last ventral segment acute at apex; claws broader at base, but not toothed. Length .32 - .44 inch; 8 - 11 mm.

This species is well known to nearly all collectors. The larva has been found by me in decaying oak. By the great kindness of my friend Sallé, I have examined the actual type of *Dromæolus novitius* Bonv. and find that it is merely a darker form of the present species.

Occurs from Pennsylvania to Illinois and Louisiana.

F. Hornii Bonv.—Form oblong, moderately robust, piceous, or nearly black, sparsely clothed with short fulvous pubescence; antennæ brownish, extending a little beyond the hind angles of the thorax, very feebly serrate, second joint as long as the fourth, third a little longer, joints 4 - 11 gradually a very little longer; head convex, coarsely and densely punctured, a distinct frontal carina between the bases of the antennæ; clypeus at base less than a third the width of the apex and less than half the distance to the eyes; thorax as long as wide, sides posteriorly parallel, anteriorly arcuately narrowing to the front, disc convex, coarsely and densely punctured, a slight depression at the middle of the base; elytra striate, faintly at middle, more deeply at the sides, densely subrugosely punctate; body beneath rather densely punctate; antennal groove deep, sharply limited; posterior coxal plate rather abruptly broader at middle; last ventral segment oval at tip; legs ferruginous; claws simple. Length .28 - 32 inch; 7 - 8 mm.

This species resembles *calceatus*, but is usually more robust and larger, the punctuation finer and the second joint of the antennæ shorter.

In his description of this species in the concluding paragraph (p. 893) Bonvouloir speaks of *F. basalis* Lec. when he plainly refers to this species. He also quotes the locality "California" in error.

Occurs in Canada and Kentucky.

F. calceatus Say.—Form oblong, moderately convex, dark brown or piceous, feebly shining, sparsely clothed with short yellowish pubescence; antennæ nearly half as long as the body, slender, second joint shorter than the fourth, joints 4 - 11 gradually slightly longer; head coarsely, deeply and roughly punctured, a small, smooth longitudinal space on the front, a distinct transverse carina between the bases of the antennæ; clypeus very narrow at base, scarcely a fourth either of its apex or the distance to the eyes; thorax longer than wide, distinctly narrower in front, sides posteriorly straight, arcuate at apical third, disc convex, a slight median depression at base, surface coarsely, densely and roughly punctured; elytra narrowed at apical third, faintly striate, surface coarsely, roughly and moderately densely punctured, but less coarsely than above; antennal groove deep and sharply limited; posterior coxal plates gradually, but rather widely dilated; tarsal claws simple. Length .20 - .24 inch; 5 - 6 mm.

In this species the interocular carina is more distinct than in *Hornii*, and the posterior coxal plates gradually not abruptly wider, these characters with the smaller second joint of the antennæ and the coarser sculpture will readily distinguish the two.

Occurs in Canada and Massachusetts.

F. molestus Bonv.—Oblong, moderately elongate, convex, very little narrowed behind, dark reddish brown, subopaque, sparsely clothed with fulvous pubescence; antennæ passing very slightly the hind angles of the thorax, second joint small, 3-8 dentate, 9-10 more slender and not dentate, eleventh longer and filiform; head coarsely, densely and roughly punctured, without longitudinal or interocular carinæ; clypeus broad at base, nearly twice the distance to the eyes; thorax a little wider than long, sides subparallel and straight behind, arcuate and narrowed to the front anteriorly, disc convex, a median longitudinal impression extending from the base to the middle, also two small impressed points in front of the scutellum, hind angles short, obtuse; surface coarsely, densely and roughly punctured; elytra slightly broader behind the middle, then arcuately narrowed to the apex, deeply striate, the intervals convex, densely, rather finely punctate and distinctly rugose; mesopleuræ rather finely and moderately densely punctured over the entire surface; legs ferruginous, claws toothed at base. Length .52 inch; 13 mm.

This species is unknown to me. It is evidently very like *orchesides*, but has the elytra a little broader behind the middle, the antennæ differently formed, and the clypeus at base broader.

The locality indicated by Bonvouloir is simply North America.

F. orchesides Newm.—Form oblong, moderately elongate, slightly narrower behind, convex, ferruginous to piceous, feebly shining, surface clothed with very short yellowish pubescence; antennæ slightly compressed, more slender externally, extending a little beyond the hind angles of the thorax, second joint small, third not as long as the next two, joints three to ten serrate, the eleventh slender and longer; head convex, coarsely and densely punctured; clypeus at base a little broader than the distance to the eyes; thorax as long as wide, sides posteriorly feebly arcuate, anteriorly obliquely narrowed to the front, disc convex, the sides suddenly deflexed in front, a distinct median impression at basal half, and on the basal margin each side of the scutellum a small fovea, surface coarsely and densely punctured, hind angles acute, very little prolonged; elytra distinctly striate, the intervals slightly convex, the punctuation finer than on the thorax, dense, slightly rugose at base, epipleuræ flat, roughly punctate; punctuation of the under side of body a little finer than on the elytra and rather dense; propleural triangle more opaque, the inner side and base equal; mesopleuræ sparsely punctate on basal half, nearly smooth in front; hind coxal plate gradually but much dilated internally; last ventral segments obtuse; claws broadly toothed at base. Length .40-.68 inch; 10-17 mm.

This is the largest in our fauna and one of the largest in the entire genus. It varies in size as well as in color, smaller specimens resembling, superficially, the next species.

Occurs in Canada, the New England and Middle States.

F. bicolor Mels.—Oblong, moderately elongate, slightly narrower posteriorly; ferruginous brown, feebly shining, the thorax more opaque, sparsely clothed with short fulvous pubescence; antennæ slender, filiform, not at all dentate, nearly as long as half the body, joint second small, third one and a half times the length of the fourth, joints four to ten gradually longer; head convex, coarsely, densely and rugosely punctured, a slight depression above the base of the clypeus, the interocular carina extending slightly on the base of the clypeus; the latter very little narrowed at base and wider than the distance to the eyes; thorax with the width and length about equal, the sides feebly arcuate and narrowing at apical third, hind angles scarcely prolonged, disc convex, sides strongly deflexed in front, a feeble median impression posteriorly, surface densely punctate, slightly opaque and rugose; elytra striate, intervals slightly convex, densely rather finely punctate and slightly rugose, epipleuræ smooth, longitudinally excavated; body beneath and legs paler than above, the punctuation moderately dense and coarser in front; mesopleuræ sparsely punctate in posterior half, nearly smooth in front; hind coxal plates gradually but much broader internally, the free edge angulate; claws broadly toothed at base. Length .32 - .46 inch; 8 - 11.5 mm.

This species resembles *orchesides* in form, but may be known by the slender antennæ and the smooth sulcate epipleuræ. This species is without doubt the same as that subsequently described by Chevrolat as *luridus*. The information given by me to Bonvouloir that *bicolor* was synonymous with *orchesides* was erroneous, from the fact that the type of LeConte's description of *bicolor* was an *orchesides*. Since that time the type of Melsheimer has been seen, and is the species above described.

Occurs from the Middle States southward, and, according to Bonvouloir, in Cuba.

F. infelix n. sp.—Form subcylindrical, parallel, very obtuse in front, narrower only at apical third, color ferruginous brown, subopaque, sparsely clothed with short yellowish pubescence; antennæ paler, slender, nearly as long as half the body, feebly serrate, joint second small, third a little longer than the fourth, joints four to eleven gradually longer; head convex, coarsely densely and roughly punctured, without trace of interocular carina; clypeus slightly narrowed at base, but not broader than the distance to the eyes; thorax very distinctly broader than long, sides posteriorly feebly arcuate but not convergent, rounded near the front angles, disc convex, coarsely, densely and roughly punctured, a vague depression each side of the base, hind angles slightly prolonged, not acute, lateral margin distinctly double from apex two-thirds to base; elytra striate, intervals slightly convex, moderately densely punctate and quite rough near the base, epipleuræ roughly punctate, not sulcate; prosternum shining, punctuation coarse but distant, the triangle with inner side shorter than the base, surface densely, coarsely punctured; antennal groove very deep and smooth, open posteriorly, very distinctly wider in front; mesopleuræ moderately, densely, finely punctate in anterior half, very smooth posteriorly; metasternum and abdomen moderately, densely punctate; hind coxal plate gradually wider internally, the free angle rounded; claws broadly toothed at base. Length .36 inch; 9 mm.

This species has an entirely different facies from any other in our fauna, it in fact resembles a very large *Microrhagus impressicollis*, and from several rather odd characters which it possesses has given me considerable trouble to arrive at a conclusion regarding its generic position. In the first place the eyes do not so much encroach upon the antennal sulcus as is usual in the other species, while the sulcus is not so free as in Dromæolus. The sulcus is very decidedly wider in front. Finally, the lateral margin of the thorax is double in its anterior two-thirds. This double margin is not at all of the form described for Diaretus. After leaving the species for very nearly the final study of the present essay, I have concluded that it is better to consider it a Fornax than to make a new generic name.

Occurs in Florida.

PHAENOCERUS Bonv.

Form oblong, very slightly depressed; antennæ shorter than the head and thorax, gradually clavate; head convex, deeply inserted, the eyes oval entire, distinctly encroaching upon the antennal groove; clypeus broad at base, as wide as the distance to the eyes, apical margin arcuate; prothorax gradually narrowed in front, very little wider than long; scutellum oval; elytra distinctly striate; prosternal striæ rather deep, straight, divergent, the propleural triangle a little longer than wide at base, the antennal groove deep, sharply limited on each side and open behind; metasternal episterna narrow, wider behind, the epimera not visible; hind coxal plates gradually wider internally; legs moderate.

The unique before me is in very bad state of preservation, being entirely deprived of tarsi, but after a renewed study, thirteen years having elapsed since my original description I can see no reason for changing the generic position of the species. The flattened clavate form of the antennæ leaves but little choice of position, but were the antennæ slender there could be no hesitation in placing it in Fornax,

One species is known in our fauna.

P. americanus Horn.—Form oblong, slightly depressed, black, feebly shining, sparsely clothed with very short black pubescence; antennæ dark brown, scarcely reaching the hind angles of the thorax, gradually clavate, first joint short, second and third equal in length, but distinctly longer than wide, fourth and fifth equal, a little longer than the third, six to ten broader than long, and gradually wider, eleventh narrower oval; head coarsely, densely punctured; thorax a little wider than long, sides gradually narrowing to the front and very slightly arcuate, disc convex, a vague depression at middle of base and a shallow, broad depression near the lateral margin, surface densely and coarsely punctured; elytra parallel, narrowed at apical third, surface striate, intervals flat, densely punctate; prosternum coarsely but sparsely punctured, more shining, the triangle more densely and opaque; metasternum coarsely, sparsely punctate; abdomen densely and much more finely. Length .30 inch; 7.5 mm.

In form this species resembles a small *Fornax orchesides*, but is much more depressed.

One specimen, Vancouver.

ADELOTHYREUS Bonv.

Form elongate, narrower posteriorly; antennæ half the length of the body, second joint very small, third as long as the next two, joints four to ten gradually shorter and more strongly serrate, joint eleven elongate oval; episterna narrow at base; propectus with a short juxta-sutural groove, limited externally in front by a feeble carina; lateral supplementary carinæ distinct, the posterior very long, the anterior short and directed arcuately downward; posterior coxal plates nearly parallel; tarsi slender, the fourth joint slightly dilated and excavated above, beneath very feebly lobed, the first joint of the posterior tarsi as long as the next three; claws very slightly broader at base.

This genus has all the essential characters of Microrhagus, excepting that the juxta-sutural groove is here merely feebly indicated in front, while in that genus the groove is entire and limited externally by a well defined carina. It is, however, probable that this character may not long remain valid, as it will be seen that in *M. humeralis* the outer carina of the groove is obliterated posteriorly, and in that and *Bonvouloiri* the coxal plates are parallel, while the tarsal structure also more nearly resembles Adelothyreus.

One species is known in our fauna.

A. Dejeani Bonv.—Slender, elongate, gradually narrower posteriorly, piceous, feebly shining, sparsely clothed with very short yellowish cinereous pubescence; head densely, roughly punctate; epistoma at base narrower than the space between it and the eye; antennæ piceous, joints four to ten serrate and gradually shorter, the eleventh elongate oval; thorax slightly longer than wide, sides rounded near the front angles, hind angles slightly divergent and with a short carina, disc convex, a slight median depression, a slight oblique depression on each side of the middle of the base, surface densely, roughly, submuricately punctate; anterior supplementary carina arcuate, directed downwards, tending to become parallel with the anterior margin, posterior supplementary carina long, extending three-fourths to the front; propectus with large but shallow punctures, the rudimentary antennal groove smooth; elytra narrower than the thorax, gradually attenuate posteriorly, disc vaguely striate, the surface closely and submuricately punctate; body beneath and abdomen rather coarsely and closely punctate; femora piceous, tibiæ and tarsi paler; last ventral segment obtuse. Length .14 - .16 inch; 3.5 - 4 mm.

This insect seems to be very rare, I have seen but one specimen collected in Maryland and kindly loaned me by Mr. Ulke.

MICRORHAGUS Esch.

Form elongate, usually narrower posteriorly; antennæ at least half as long as the body, second joint small, third usually nearly as long as the next two, four

to ten serrate, sometimes pectinate in the male; epistoma variable, usually very narrow at base; propectus with an entire juxta-sutural sulcus limited externally by an entire carina (except in *humeralis*); lateral supplementary carina distinct, variable between the species; posterior coxal plates variable, usually narrower externally, in two species parallel; tarsi slender, the first joint of the posterior pair usually as long as the next three, the fourth joint usually broader and lobed beneath (except in two); claws variably dilated at base.

Before presenting the table of species and entering upon their description it is well to explain the meaning of several terms originated by Bonvouloir, and which I have retained for the sake of uniformity.

The *anterior supplementary carina* is an elevated line connected with the apical marginal ridge near the front angles and directed backward. This carina is short in all the species except *pectinatus*, in which it extends to the middle of the side of the thorax.

The *posterior supplementary carina* begins at the tip of the hind angle beneath and extends forward more or less sinuously, it is rarely long, in two species very short (*audax* and *imperfectus*) and in another (*pectinatus*) entirely wanting. This carina is really the true lateral margin of the thorax, as in some Cardiophorini.

The *juxta-sutural sulcus*, to receive the antennæ when at rest, follows nearly the line of the prosternal suture, it is limited externally by a well defined ridge, which is entire except in *humeralis* and *imperfectus*.

The other terms are such as are commonly used, and need no explanation.

There seems to be a tendency in our species to show the gradual obliteration of the characters which separate Adelothyreus and Microrhagus by the disappearance of the posterior portion of the outer carina of the sulcus, the wide coxal plates and the simple tarsi.

In his tabular arrangement of the species Bonvouloir prefers to start with characters drawn from the supplementary carinæ. The form of the coxal plates seems to me of far greater importance (it has more than generic value in some parts of the series) in enabling us to show more clearly the relationship between Microrhagus and Adelothyreus.

In a paper entitled "Throscides et Eucnémides Gallo-Rhénane," by A. Fauvel (Rev. d'Entomologie iv, p. 338) the name Dirrhagus *Latr.* is adopted in lieu of Microrhagus.

The following table will enable the species to be readily distinguished:

Posterior coxal plates dilated internally, narrow externally.....2.
Posterior coxal plates parallel, not dilated internally; posterior supplementary carina very nearly entire.....8.

2.—Anterior supplementary carina of prothorax long, extending from the apex to the middle, the posterior carina entirely wanting.....**pectinatus.**
Anterior supplementary carina short, not reaching the middle of thorax.....3.
3.—Posterior supplementary carina very short.
Outer carina of juxta-sutural sulcus entire; middle of disc of thorax impressed.....**audax.**
Outer carina of juxta-sutural sulcus much abbreviated posteriorly; disc of thorax not impressed.....**imperfectus.**
Posterior carina extending at least to the middle of thorax, sometimes longer.....4.
4.—Metathoracic episterna very narrow in front, broader posteriorly.....5.
Metathoracic episterna broad and parallel.....7.
5.—Pronotum without ante-scutellar carina, the median line impressed posteriorly.....**subsinuatus.**
Pronotum with distinct ante-scutellar carina, without median impressed line.....6.
6.—Pronotum narrowed in front, the sides distinctly sinuate.....**oblitus.**
Pronotum with parallel sides, or even slightly wider in front.
triangularis.
7.—Disc of thorax impressed, posterior supplementary carina very nearly entire.
impressicollis.
8.—Prosternum obtuse at tip, outer carina of the juxta-sutural sulcus entire.
Bonvouloiri.
Prosternum prolonged and acute at tip, outer carina of juxta-sutural groove obliterated posteriorly.....**humeralis.**

M. pectinatus Lec.—Piceous, moderately shining, form elongate, slightly narrower posteriorly, surface sparsely clothed with a very short cinereous pubescence; antennæ piceous, two-thirds ♂, or one-half the length of body ♀, pectinate from the third joint ♂, or acutely serrate ♀; head coarsely and rather closely punctate, a distinct longitudinal impression between the eyes, the occiput carinate, supra-antennal ridges distinct; clypeus very narrow at base; prothorax wider than long, sides parallel, rounded in front, disc moderately convex, moderately coarsely, but not densely punctured, a slight ante-scutellar carina with a slight depression each side, hind angles finely carinate; anterior supplementary carina of the thorax long, reaching the middle of the thorax, posterior carina extremely short, almost entirely absent; juxta-sutural sulcus slightly wider posteriorly, the outer carina entire extending to the hind angles of the thorax; elytra as wide at base as the thorax, slightly narrowed posteriorly, disc vaguely striate, densely and more coarsely punctured than the thorax; prosternum coarsely punctured, propleuræ more coarsely punctured; metasternum and abdomen at sides coarsely closely punctate, at middle and apex more finely and sparsely; metasternal episterna slightly wider posteriorly; legs brownish, tibiæ and tarsi paler; fourth joint of tarsi dilated and lobed beneath, claws simple, hind coxal plates distinctly narrower externally. Length .18–.20 inch; 4.5–5 mm.

This species is known by the pectinate male antennæ, the long anterior supplementary carina and the almost total obliteration of the posterior. The latter character has been passed in silence by Bonvouloir, who states, by mistake, that the metasternal side pieces are parallel.

The only variation observed is in one specimen in which the median line of the thorax is slightly impressed.

Occurs in Canada, New York, Pennsylvania and Virginia.

M. audax n. sp.—Form moderatrly elongate, gradually narrower behind, piceous, feebly shining, sparsely clothed with short fulvous pubescence; elytra pale brown; antennæ and legs bright rufo-testaceous; antennæ two-thirds the length of the body, strongly serrate from the fourth joint; head coarsely, densely and roughly punctate, vertex with three vague impressions arranged in a triangle; clypeus slightly wider at base than the space between it and the eye; prothorax a little wider than long, sides parallel, rounded only at the front angles, hind angles not divergent, distinctly carinate, disc convex, densely and rather coarsely punctured, a moderately deep median impression extending from the base to the middle and two vague oblique impressions each side; anterior supplementary carina short, one-fifth the length of the thorax, oblique, posterior carina extremely short; juxta-sutural sulcus deep and smooth, slightly wider posteriorly, the outer carina entire, extending to the hind angles; elytra as wide as the thorax, narrowing at apical third only, disc vaguely striate, moderately densely punctured, rather less dense than on the thorax, a little finer near the apex, somewhat rugose on the basal depression; body beneath rather coarsely and closely punctate, more coarsely on the prosternal parapleuræ; metasternal episterna very narrow, slightly broader posteriorly; posterior coxal plates much narrower externally; fourth tarsal joint dilated and lobed beneath, claws dilated at base. Length .14 inch; 3.5 mm.

Having seen but one specimen of this species it is impossible to say with certainty that the pale reddish brown color of the elytra is a constant character. It is, however, remarkable among our species in having both the supplementary carinæ very short and the median depression of the thorax rather deep.

Pennsylvania. Cabinet of Mr. H. Ulke.

M. imperfectus Lec.—Form moderately elongate, slightly narrower behind, piceous, feebly shining, sparsely clothed with very short fulvous pubescence; antennæ reddish brown, the basal joint darker, half as long as the body, feebly serrate; head coarsely and moderately densely punctured, front slightly concave; clypeus at base narrower than the distance from it to the eye; thorax as long as wide, sides parallel behind, arcuate at apical third, disc moderately convex, coarsely not densely punctured, a finely impressed line from the base to the middle, hind angles obtusely carinate; anterior supplementary carina straight, extending nearly one-third to base, posterior carina extremely short; juxta-sutural sulcus deep, punctured posteriorly, the outer carina extending barely more than one-half from the apex; elytra substriate, surface coarsely and rather closely punctured, the punctures coarser than on the thorax and quite rough at base; body beneath rather densely punctured; prosternal episterna narrow, slightly broader posteriorly; hind coxal plates narrower externally; legs brown, tarsi paler, the fourth joint broader and lobed beneath, the claws dilated at base. Length .20 .22 inch; 5 - 5.5 mm.

This species resembles the females of *pectinatus* and *subsinuatus*, but may be known from any of the species with narrowed hind coxal plates by the obliteration behind of the outer carina of the juxta-sutural sulcus.

Occurs in New York, Massachusetts and Maryland. I am indebted to Mr. Fred. Blanchard for the only one I possess.

M. subsinuatus Lec.—Form moderately elongate, slightly narrower behind, more so in the male, piceous or nearly black, moderately shining, very sparsely clothed with very short brown pubescence; antennæ piceous, feebly serrate, three-fourths the length of the body ♂, or a little shorter than that ♀; head coarsely and moderately densely punctured, a slight depression above the base of the clypeus; clypeus narrow at base, not more than half as wide as the distance between it and the eye; prothorax wider than long ♂, a little less broad ♀, narrower in front, the sides sinuate at middle ♂, or nearly straight ♀, the hind angles carinate, at tip incurved; disc moderately convex, slightly depressed at the hind angles, a distinct median impression extending from the base to the middle, surface moderately, not densely punctured; anterior supplementary carina at a right angle to the apical margin, extending nearly one-third toward the base, posterior carina very long, reaching nearly three-fourths to apex; juxta-sutural sulcus deep and smooth, its external carina entire, reaching the hind angles; elytra obsoletely striate, moderately densely and roughly punctured, the punctuation rougher and denser than on the thorax; body beneath rather coarsely and densely punctured; metasternal episterna narrow, slightly wider behind; hind coxal plates narrower externally; legs piceous, tarsi rufous, fourth joint broader and distinctly lobed, claws distinctly dilated at base. Length .14 - .20 inch; 3.5 - 5 mm.

In this species I have observed no special variation beyond that of color due to various degrees of maturity. The marginal ridge of the apex of the thorax is less developed than usual, and the posterior supplementary carina very long.

The female of *substriatus* resembles, superficially, *imperfectus*, but the character of the posterior supplementary and the juxta-sutural carina serve to separate them. *M. substriatus* seems to have been unknown to Bonvouloir, his description being nearly entirely quotation. The measurement given is, however, incorrect, and should be .2 inch; 5 mm.

Occurs in Canada, Nova Scotia, Ohio, D. C. and Virginia.

M. oblitus Bonv.—Form moderately elongate, slightly narrower posteriorly, piceous, hind angles of thorax rufescent; elytra dark reddish brown, sparsely clothed with very short yellowish pubescence; antennæ pale reddish brown, serrate from the fourth to tenth joints, two-thirds as long as the body; head moderately, coarsely and densely punctate, slightly rugose, a slight carina on the vertex; clypeus at base much narrower than the space between it and the eye; prothorax a little wider than long, distinctly narrowed from the base to the apex,

sides slightly sinuate, basal region slightly depressed, a small ante-scutellar carina not quite reaching the middle in front, surface rather coarsely but not densely nor roughly punctate; elytra indistinctly striate, the punctuation well marked and slightly rugose. Length .18 inch; 4.5 mm.

This species is unknown to me, and the above description is from Bonvouloir. It apparently resembles *subsinuatus* more closely than any other of our species. It is to be regretted that Bonvouloir has omitted special mention of the supplementary carinæ in nearly all his specific descriptions as they seem important, not only in the manner he uses them in his synoptic table, but for the separation of closely related species.

One specimen from Illinois (Museum at Stockholm).

M. triangularis Say.—Form moderately elongate, narrower behind, piceous, or nearly black, feebly shining, very sparsely clothed with short yellow-brown pubescence; antennæ piceous, feebly serrate, extending one-half ♀, or three-fourths the length of body ♂; head rather coarsely, closely punctate, a slight depression above the base of the clypeus, vertex feebly carinate or not; clypeus narrower at base than the distance between it and the eye; prothorax with the length and width nearly equal, sides straight and parallel, arcuate at the front angles, hind angles carinate; disc moderately convex, a distinct ante-scutellar carina terminating in a slight median depression; anterior supplementary carina short, oblique, the posterior long, reaching the middle of the thorax; juxta-sutural sulcus smooth and deep, nearly parallel, the outer carina entire; surface of thorax moderately, coarsely and densely punctured; elytra obsoletely substriate, closely and roughly punctate; body beneath coarsely and moderately closely punctate; metasternal episterna nearly concealed in front, slightly wider behind; hind coxal plates distinctly narrower externally; legs brownish; fourth joint of tarsi broader and slightly lobed beneath, tarsal claws dilated at base. Length .12 - .16 inch; 3 - 4 mm.

In some specimens the thorax is impressed on each side, otherwise there is no notable variation except in size, and somewhat in color.

Occurs from Canada to Georgia.

M. impressicollis Bonv. Form elongate, subcylindrical, slightly narrower behind, rufo-ferruginous, feebly shining, sparsely clothed with very short fulvous pubescence; antennæ a little longer than half the body, joints four to ten distinctly serrate; head coarsely, densely and rather roughly punctured; clypeus broad at base and nearly twice as wide as the space between it and the eye; prothorax a little wider than long, slightly narrower in front, sides posteriorly parallel, anteriorly arcuately narrowing, hind angles short, acute and distinctly carinate; anterior supplementary carina short, slightly arcuate, the posterior very long and almost joining the apical margin; disc convex, a median impressed line starting from the base and reaching the middle, where it becomes deeper and broader, surface densely, coarsely and somewhat roughly punctured; juxta-sutural sulcus moderately deep, but relatively narrow, the outer carina well marked but feebler in its basal extension outwardly; elytra distinctly striate,

the punctuation less dense and finer than on the thorax; body beneath more shining than above, the punctuation moderate, but not dense; metasternal episterna rather broad and parallel; posterior coxal plates much narrower externally; last ventral segment with a large pubescent fovea ♂, or simple ♀, the tip prolonged in an obtuse point ♂, or rounded ♀; fourth tarsal joint dilated and lobed beneath, the claws slightly broader at base. Length .22 - .26 inch; 5.5 - 6.5 mm.

This is the largest species in our fauna. It is easily known by the deep impression of the middle of the disc of the prothorax and the very long posterior supplementary carina. The juxta-sutural sulcus is relatively narrow, so that the space exterior between it and the supplementary carina is at least three times the width of the sulcus.

After a careful study of a specimen in the cabinet of Dr. LeConte in comparison with the descriptions of Bonvouloir, I feel constrained to unite *mucidus* Bonv. and *impressicollis*. The former differs merely in the absence of the pubescent fovea in the last ventral segment, the latter being obtuse at tip. The differences seem purely sexual, *impressicollis* being probably the male. I am indebted to Mr. Sallé for a typical male.

Occurs in Florida, Louisiana and Texas.

With this species Bonvouloir has associated *M. Sahlbergi* Mann., a rare species of Europe, which has on the penultimate ventral segment a pubescent fovea. I do not find this character mentioned by any other European author. It would be interesting to learn if it is merely sexual.

M. Bonvouloiri n. sp.—Form moderately elongate, narrower behind ♂, or nearly parallel ♀, piceous, moderately shining, sparsely clothed with very short fulvous pubescence; antennæ rufo-ferruginous, longer than half the body, the joints three to ten distinctly longer than wide and slightly serrate ♂, or not serrate ♀; head coarsely and closely punctate, front above the epistoma depressed, vertex with a fine impressed line ♂; clypeus as broad at base as the distance to the eye; prothorax as long as wide, sides parallel, rounded near the front angles, hind angles carinate; disc of thorax convex, a distinct oblique depression within the hind angles, surface coarsely, densely and very roughly punctured; anterior supplementary carina short, slightly arcuate, posterior carina long, nearly reaching the apical margin; juxta-sutural sulcus moderately deep, parallel, the outer carina entire, extending obliquely to the hind angles but less elevated in this posterior portion; elytra vaguely striate, surface coarsely and roughly punctured, but less densely than on the thorax; body beneath coarsely and closely punctate, rather roughly on the last ventral segment; prosternum at tip obtuse and rounded; metasternal episterna very narrow in front, wider posteriorly; hind coxal plates wide and parallel; femora piceous, tibiæ and tarsi rufo-ferruginous, fourth tarsal joint narrow, not lobed beneath, claws slightly dilated at base. Length .12 - .18 inch; 3 - 4.5 mm.

When fully colored this species is entirely piceous, but specimens occur with the apical and basal margins of the thorax much paler, as in *humeralis*.

This species is closely related to *humeralis*, but differs in coloration, the thorax is also longer, the prosternum at tip of different form and the outer carina of the sulcus is entire. In one ♂ specimen, however, that carina becomes very feeble posteriorly, but the oblique portion is well developed.

Regarding this species there seems to be an amount of confusion difficult to explain. From Bonvouloir's statement LeConte sent him a specimen of this species as a type of *humeralis*, and Bonvouloir has so described it. I suspect that LeConte sent one of those entirely piceous specimens mentioned by him (Trans. Amer. Philos. Soc. x, p. 420) in a paragraph not quoted by Bonvouloir.

While in Paris, in 1874, my friend Sallé gave me from his cabinet one of three specimens from Louisiana labeled by Bonvouloir "*arduus*," and on asking recently for information from Sallé I have been informed that Bonvouloir has also written on the label "se place après humeralis," which is true of the specimen, but not of "*arduus*." Moreover, *arduus* belongs to the series with the coxal plates narrower externally.

As Bonvouloir has certainly given wrong names to this and the following species, I have been compelled to change the name to *Bonvouloiri*.

Occurs in Pennsylvania, D. C. and Louisiana.

M. humeralis Say.—Form cylindrical, moderately robust, slightly narrower behind, piceous, subopaque, elytra at base reddish, surface very sparsely clothed with extremely short fulvous pubescence; antennæ rufo-ferruginous, as long as half the body ♂, shorter ♀ joints four to ten longer than wide and distinctly serrate ♂, or not longer than wide and not serrate ♀; head coarsely, closely and roughly punctate, smoother at middle, slightly impressed above the base of the clypeus, supra-antennal ridges well marked; clypeus at base wide, equal to the distance to the eye; thorax longer than wide, sides parallel, arcuate near the front angles, hind angles short, carinate; disc convex, a feeble median impressed line, surface densely, coarsely, roughly punctate; anterior supplementary carina short, oblique, the posterior long and very nearly reaching the apical margin; juxta-sutural sulcus moderately wide, slightly broader and punctate posteriorly, the outer carina abbreviated, extending to a point opposite the front of the coxæ; elytra vaguely striate, the intervals often slightly convex, surface densely and roughly punctate; body beneath piceous or brown, densely punctate; metasternal episterna narrow in front, slightly broader behind; hind coxal plates broad and parallel; last ventral segment obtusely prolonged; prosternal

process prolonged and acute; legs ferruginous, fourth basal joint narrow and not lobed beneath, the claws very slightly broader at base. Length .12 - .24 inch; 3 - 6 mm.

In this species the apical and basal margins of the thorax are often pale, and the extent of red at the base of the thorax varies from a narrow space until it covers very nearly the basal half. The under side of the body also varies in color from piceous to pale brown.

This species is especially noteworthy from the abbreviation of the outer carina of the juxta-sutural sulcus showing a tendency toward Adelothyreus, which is further illustrated by the wide coxal plates and the narrow fourth tarsal joint.

By some inexplicable error Bonvouloir has described this species as new, under the name *meticulosus*. The descriptions by Say and LeConte are so clear as to the color, and this in connection with the types in LeConte's cabinet leaves no doubt as to the species they both had in view.

Widely distributed over the United States from Canada southward, and Bonvouloir reports it from Cordova, Mexico.

ENTOMOPHTHALMUS Bonv.

Antennæ slender, nearly as long as the entire body, the second and third joints very small, together shorter than the fourth.

The other characters are as in Microrhagus. The emargination of the eye, from which Bonvouloir derives the generic name, is variable in extent and does not form a character separating the two genera as traces of a similar structure are observed in *M. impressicollis*.

In our species the third antennal joint is smaller than the second, while in his description Bonvouloir, by a *lapsus calami*, compares the third joint with the fourth.

There is but one species known in our fauna.

E. rufiolus Lec.—Form moderately elongate, slightly narrower behind, ferruginous, moderately shining, sparsely clothed with very short fulvous pubescence; antennæ slender, feebly serrate, nearly as long as the entire body; head coarsely not densely punctate, eyes feebly emarginate in front; clypeus at base a little wider than the space between it and the eye; prothorax a little wider than long, sides straight and parallel, scarcely at all rounded at the front angles, hind angles feebly carinate; disc moderately convex, obliquely depressed each side within the hind angles, a feeble ante-scutellar carina terminating in a feeble median depression extending two-thirds to apex; surface coarsely not densely punctured; anterior supplementary carina very short, the posterior extending three-fourths to apex; juxta-sutural sulcus deep, slightly wider posteriorly, the outer carina well developed and entire; elytra vaguely striate with coarse, mod-

erately closely placed punctures substriately arranged, the intervals with finer punctures; body beneath rather coarsely and closely punctate; prosternum narrow between the coxæ, prolonged and acute; metasternal episterna narrow; hind coxæ much dilated internally; fourth tarsal joint dilated and slightly lobed beneath, claws slightly dilated at base. Length .16 inch; 4 mm.

In its form this species resembles *Micr. triangularis*, but the color is pale ferruginous.

Occurs in Canada, Illinois and Tennessee, but seems very rare.

XYLOBIUS Latr.

Form elongate, cylindrical; antennæ a little shorter than half the body, joints four to ten quadrate, equal, joint eleven narrower at apex, a little shorter than the two preceding together; head deeply inserted, eyes small, round and feebly convex; clypeus trisinuate along the apical margin, base narrow, less than half the distance to the eyes; thorax narrower only at apical third, lateral margin line entire; scutellum oval; prosternal sutures straight, but divergent, under side of prothorax without trace of antennal grooves; metasternal episterna parallel, the epimera concealed; hind coxal plates nearly parallel, the posterior margin slightly sinuous; legs rather short, tarsi compressed, gradually attenuate toward the apex, the first joint of the posterior pair as long as the next two, the fourth obliquely truncate and slightly excavate above so as to appear lobed beneath, claws slightly broader at base.

One species is known in our fauna.

X. cylindriformis Horn.—Elongate, cylindrical, narrower at apical third; color variable; antennæ ferruginous, fourth joint longer than third or fifth, third longer than that portion of the second seen from the front; head coarsely, closely and deeply punctured, fourth slightly impressed; thorax a little wider than long, sides parallel, arcuately narrowing at apical third, hind angles acute, very slightly divergent, carinate, disc convex, coarsely, deeply and rather closely punctate; elytra very indistinctly striate, with coarse, deep punctures closely placed, the intervals very narrow, with a few finer punctures; prothorax beneath with very large punctures, not closely placed; metasternum less coarsely but more densely punctured, abdominal punctures still less coarse, but more sparsely placed; legs ferruginous. Length .18 - .26 inch; 4.5 - 5 mm.

The two specimens before me vary in color in the following manner: "Head piceous, anterior margin ferruginous; thorax piceous, apical and basal margins rather broadly, the lateral margin narrowly red; elytra piceous, entire limb, base and suture paler; body beneath brownish red, the metasternum piceous (*typical specimen*).

"Above and beneath almost entirely piceous, the base, apex and sides of thorax narrowly paler."

This species resembles the two European forms, but is more robust than either, with the thorax more densely and coarsely punctate.

Occurs in California and Nevada.

HYLOCHARES Latr.

Form cylindrical, robust, slightly narrower behind; antennæ not passing the hind angles of the thorax, third joint twice as long as the second or fourth, joints four to ten equal, as broad as long, very vaguely serrate, eleventh longer; head deeply inserted, eyes oval entire; clypeus narrowed at base, trilobed in front; thorax broader than long, lateral margin entire; under side without antennal grooves, prosternal sutures straight, divergent in front; metasternal episterna moderately broad, narrower in front, the epimera slightly visible; hind coxal plates parallel; legs moderate, first joint of hind tarsi as long as the next two, fourth lobed beneath, claws dilated at base; last ventral segment more or less prolonged at middle.

This genus is closely related to Xylobius and Sarpedon, but may be known by the trilobed clypeus. I do not find the metasternal episterna entirely concealed as stated by Bonvouloir.

But one species occurs in our fauna.

H. nigricornis Say.—Cylindrical, slightly narrower behind, black, feebly shining, the apical, and sometimes the basal margin of the thorax reddish; head coarsely, densely and deeply punctured, front marked with a deeply impressed line which divides in front; clypeus a little wider at base than the distance to the eyes; thorax broader than long, arcuately narrowing at apical half to the front, median line deeply and broadly impressed, a moderately deep transverse impression at middle, an oblique impression within the hind angles, the latter small, not carinate; surface coarsely, closely and deeply punctured; scutellum oval, acute, as wide as long; elytra deeply striate, striæ coarsely punctured, intervals convex, more finely punctured than the thorax, but quite rugose; prosternum coarsely and closely punctate, the pleuræ more coarsely but less closely; metathorax less coarsely and less densely punctured than the prosternum; abdomen similarly but more closely punctate; last ventral segment slightly prolonged at middle and sinuate each side; legs brownish. Length .32 - .38 inch; 8 - 9 mm.

Occurs in Ohio.

SARPEDON Bonv.

Form cylindrical, moderately robust, slightly narrower behind; antennæ slightly passing the hind angles of the thorax, joints three to ten bipectinate in the male, deeply bilobed in the female; head deeply inserted as far as the eyes these oval entire; clypeus with the anterior border arcuate, with a slight emargination at middle, at base narrowed to one-half; prothorax nearly quadrate, lateral marginal line acute and entire; under side without antennal grooves, prosternal sutures straight, divergent in front; scutellum rather broad, oval at tip; metasternal episterna moderately broad, broader posteriorly, the epimera distinctly visible; plates of the hind coxæ slightly sinuous on the posterior border and slightly wider externally; legs rather short, posterior tarsi with the first joint as long as the next three, the fourth joint slightly broader and excavate above, slightly lobed beneath; claws simple; last ventral segment slightly prolonged in an obtuse point.

In the above description there will be observed two differences from that by Bonvouloir, who says the metasternal epimera are invisible, and in the form of the antennæ. In the female the antennal joints somewhat resemble those of Prionus, while in the male they are distinctly bipectinate, the branches being as long as the joint, the front branch arising from the distal end of the joint, while the posterior arises from the basal end. Sarpedon is closely related to Hylochares, but the two differ in the form of the clypeus and the structure of the antennæ.

One species is known.

S. scabrosus Bonv.—Black, subopaque, apical margin of the thorax reddish brown, the pubescence extremely short and sparse; head coarsely, densely and roughly punctured, front triangularly impressed above the base of the clypeus and with a moderately deeply impressed line extending to the occiput; clypeus much narrower at base than the distance to the eyes; thorax quadrate, as long as wide, sides straight, slightly arcuate near the front angles alone, hind angles not carinate, disc convex, a median rather broad depression, a transverse depression on each side in front of middle and one on each side at base oblique, surface densely and very roughly punctate; elytra striate, the intervals convex, roughly densely punctate; body beneath more shining than above, densely punctate, the punctures of the prothorax large and variolate, of the pectus large and coarse, on the abdomen dense and gradually finer to the apex; legs piceous, the tarsi ferruginous. Length .22 - .26 inch; 6.5 mm.

The length of this species as given by Bonvouloir is 10 mm., but the line on the plate as drawn by Migneaux is 5 mm., the former is certainly incorrect.

Occurs in Canada, Tennessee, Nebraska, but is very rare.

NEMATODES Latr.

Form elongate, cylindrical, more or less attenuate posteriorly; antennæ filiform, usually slightly thicker externally; head deeply inserted, convex, eyes slightly convex; clypeus narrowed at base, apex arcuate at middle, on each side slightly sinuate; mandibles rather broad and coarsely punctured; prothorax usually longer than wide, the sides straight at posterior two-thirds, the lateral marginal line entire, the prosternal sutures straight, the propleuræ of elongate triangular form with vague antennal depressions; metasternal episterna narrow, parallel, the epimera not visible; hind coxal plates widely dilated internally; last ventral segment more or less prolonged in a point; legs rather slender, the first joint of the hind tarsi as long (or nearly so) as the following joints together, fourth joint excavate-emarginate and slightly lobed beneath; claws simple.

The antennæ differ in the proportions of their joints in our species and will be described in their proper places.

While Nematodes is evidently more related to Schizophilus, Epiphanis and Hypocœlus, the resemblance in many important respects to Dromæolus must not be lost sight of, as there are several species of the latter genus in which the antennal grooves are rather shallow and not as sharply limited as in the majority.

The species known in our fauna are as follows:

Color piceous or dark brown; last ventral segment distinctly prolonged; size 6 - 9.5 mm ..... 2.

Color ferruginous, form slender; last ventral not prolonged, but not obtuse; size 3.5 mm ..... **teres.**

2.—Joints 4-5-6 of the antennæ small, not longer than wide, the following joints equal, rather abruptly longer ..... **penetrans.**

Joints 4-5-6 longer than wide and very little shorter than the following joints.

Elytra gradually narrowed posteriorly from the humeri; antennal depression near the middle of the propleural triangle ..... **atropos.**

Elytra gradually narrowed posteriorly; antennal depression smooth, extending along the entire outer margin of the propleural triangle. **punctatus.**

Elytra parallel, narrowed only at apical third; antennal depression adjacent to the margin ..... **pavidus.**

N. atropos Say.—Subcylindrical, elongate, attenuate posteriorly, subopaque, very dark brown, almost black, sparsely clothed with a short grayish pubescence; antennæ paler brown, a little shorter than half the body, slightly shorter in the female than the male, second joint longer than the fourth, third nearly equal to the next two, four to eleven gradually longer, each longer than wide, joints six to eleven a little wider than the preceding joints; head coarsely, densely and vaguely punctured, a vague triangular impression above the base of the clypeus with a vaguely impressed line on the front; clypeus a little narrower than the distance to the eye; prothorax distinctly longer than wide, widest one-third from apex, the sides from this arcuately narrowing to the front, behind nearly straight, slightly convergent, hind angles acute, not carinate, slightly divergent, disc convex, slightly flattened at middle, median line impressed, extending very nearly to the apical margin, on each side a fovea more or less impressed, surface densely and rugosely punctate; elytra gradually narrowed posteriorly, surface striate, the intervals flat, densely rugosely punctate, but less coarsely than the thorax; prosternum sparsely punctate, triangle of propleuræ more densely punctate, the antennal depression along its middle; metasternum coarsely punctate; abdomen sparsely punctate at middle, more densely at the sides and very roughly on the last segment, the apex of which is prolonged in a point; legs reddish brown. Length .24 - .36 inch; 6 - 9 mm.

This species is, as a rule, larger than the next, and differs in the structure of the antennæ.

Occurs from Canada to Louisiana.

N. penetrans Lec.—Elongate, subcylindrical, narrower posteriorly, dark brown or piceous, feebly shining, sparsely clothed with short cinereous pubescence; antennæ ferruginous, not as long as half the body, second joint longer than the fourth, third fully as long as the next two, four, five and six short, as wide as long, seven to eleven wider, equal in length, each as long as the third; head densely and roughly punctured, a slight depression above the base of the clypeus, above which is a slightly elevated smooth line; thorax distinctly longer than wide, sides at apical third arcuately narrowing to the front, posterior two-thirds straight and parallel, hind angles acute not carinate, disc convex, at middle slightly flattened, a distinct median impression extending two-thirds to the front, on each side a fovea more or less distinct, surface densely, roughly punctate; elytra distinctly striate, the intervals flat, densely but not rugosely punctate; prosternum moderately closely punctate, the propleural triangle more densely, the antennal vague impression median; metasternum and abdomen densely punctate, the last ventral segment rough and acutely prolonged; legs rufo-ferruginous. Length .24 inch; 6 mm.

In this species the median line of the thorax is less depressed and shorter than in *atropos*, the antennæ otherwise formed and the under side of the body more densely punctured.

Occurs from Canada to Georgia.

N. punctatus Lec.—Form moderately elongate, gradually narrower from the humeri posteriorly, ferruginous brown, feebly shining, sparsely clothed with fulvous pubescence; antennæ slender, as long as half the body, joint two a little longer than the fourth, third very little longer than the entire second, joints four to eleven gradually increasing in length; head convex, very coarsely and roughly punctured, a slight depression above the base of the clypeus, the latter a little narrower than the distance to the eyes; thorax not longer than wide, widest between the hind angles, sides nearly parallel posteriorly, arcuately narrowing to the apex, hind angles acute, very little prolonged; disc convex, without median depression, surface coarsely, densely and very roughly punctured; elytra gradually narrower from the humeri, striate, intervals slightly convex at base, coarsely asperately punctate, especially in front; prosternum coarsely, obsoletely punctured, the triangle more coarsely, the antennal depression extending along the entire outer border and smooth; metasternum and abdomen densely punctate, the last ventral segment roughly at apex, the tip obtusely prolonged; legs brown. Length .21 - .26 inch; 5.5 - 6.5 mm.

It is very evident that the description by Dr. LeConte has been made partly from two distinct species, and I assume that the specimen in his cabinet bearing his label must be accepted as the type of the species. In *punctatus* the third antennal joint is very little longer than the entire second and not longer than the fifth, while in the next species the third joint is decidedly longer than both the third and fifth. In *parilis* the antennal groove is visible only in front, while in *punctatus* it is much smoother and extends the entire length of the outer margin.

Occurs in Florida.

N. pavidus n. sp.—Cylindrical, narrower at apical third, dark brown, very slightly shining, sparsely clothed with very short fulvous pubescence; antennæ a little shorter than half the body, paler brown, joint two a little longer than the fourth, third a little longer than the second, but not as long as the fourth and fifth together, fourth very little longer than wide, five to eleven gradually more elongate and very little wider; head convex, very coarsely, roughly punctured, a distinct depression above the base of the clypeus, which is as wide at base as the distance to the eye; thorax a little wider than long, sides at apical third arcuately narrowing to apex, posteriorly parallel, hind angles acute, very little prolonged, not carinate, disc convex, a vague median impression, surface very coarsely and roughly punctured; elytra striate, the intervals flat, slightly convex near the base, moderately, densely, coarsely punctured, much less coarse than on the thorax, slightly rugose near the base; prosternum shining, rather finely sparsely punctured triangle of propleuræ much more coarsely and densely except near the margin; the antennal depression is adjacent to the lateral margin in front; metasternum and abdomen moderately densely and coarsely punctate, the last ventral very rugose, its apex subacute, but not prolonged; legs pale brown. Length .26 inch; 6.5 mm.

The above description has been made from one of the two specimens used by Dr. LeConte. By the table given by Bonvouloir (Mon. p. 647) this species seems most closely related to *cuneatus* and *infuscatus*, from both of which it differs in form and the mode of punctuation of the prosternum. It has also a pronounced superficial resemblance to *Microrhagus impressicollis*. In several of the species already described (*Biarti* and *suspectus*) the thorax has the width equal to the length, but the present is the only one known to me with the width greater.

This species has for its type the Texas specimen referred to by Dr. LeConte (Proc. Am. Philos. Soc. 1878, p. 404), which differs not only by the slight antennal variation, but also in general form and by the antennal depression visible only near the front of propleural triangle.

One specimen, my cabinet, Texas.

N. teres n. sp.—Form slender, cylindrical, narrower behind, pale rufo-ferruginous, feebly shining, sparsely pubescent; antennæ less than half the length of the body, second joint as long as the fourth, third longer, joints four to eleven very gradually increasing in length, each about one-third longer than wide; head convex, punctuation coarser, rough and variolate, front not impressed; clypeus at base as wide as the distance to the eye; prothorax longer than wide, the sides straight and parallel, arcuate slightly at the front angles, disc convex, without impressions, the surface coarsely, deeply, densely and roughly punctured; hind angles very little prolonged, not carinate; elytra parallel, narrowed only at apical third, striate, the intervals flat, with a single series of coarse and deep, but irregularly placed punctures; prosternum coarsely not closely punctured, the mucro short, sulcate between the coxæ, the propleural triangle more closely punc-

tured and without trace of antennal depression; metasternum very coarsely and closely punctured; abdomen less coarsely and more sparsely punctate, the last segment rugose, the apex not prolonged in a point. Length .14 inch; 3.5 mm.

This species differs from all our other species in the absence of prolongation to the last ventral segment, a character which seems rather of feeble value inasmuch as in *penetrans* I have observed a gradual diminution of the spine and its almost total obliteration. In other genera species have been admitted with and without the acute tip of the last ventral.

From the table of species as well as by the description this species seems very closely related to *liliputanus*, which is similar in color and even smaller in size.

Occurs at Columbus, Texas.

HYPOCŒLUS Esch.

Form oblong, slightly narrowed posteriorly; antennæ filiform, not dentate; head convex, deeply inserted in the thorax; clypeus narrowed at base, apical margin arcuate; thorax a little wider than long; elytra striate, their spaces obtuse; prosternal sutures straight, divergent, propleural triangle but little longer than wide and with a slight antennal depression in front; metathoracic episterna parallel, the epimera not visible; hind coxal plates dilated within; last ventral segment very obtuse at tip; legs moderate, tarsi filiform, the first joint of the posterior pair as long as the next three, the fourth not dilated nor lobed beneath; claws slender.

Hypocœlus is very closely related to Nematodes, and is distinguished by the simple fourth tarsal joint and the very obtuse terminal ventral segment.

Two species are known in our fauna, separated as follows:

Terminal joint of the antennæ very little longer than the preceding; a distinct transverse ridge on the front, clypeus concave..... **frontosus.**

Terminal joint of the antennæ longer than the preceding, in the ♂ as long as the ninth and tenth together; front with a fine longitudinal carina, clypeus flat..... **terminalis.**

H. frontosus Say.—Form oblong, slightly attenuate posteriorly, piceous black, subopaque, clothed with fine yellowish cinereous pubescence; antennæ ferruginous, shorter than half the body, filiform, second joint shorter than the fourth, third longer, joints four to ten very gradually longer and slightly broader, eleventh oval, acute at tip, very little longer than the tenth; head densely and rather roughly punctate, front with a distinct, transverse, slightly arcuate carina, beneath the front is slightly concave; clypeus concave, narrower at base than the distance to the eyes; prothorax a little wider than long, slightly narrower in front, sides straight and slightly convergent posteriorly, slightly arcuate at apical third, hind angles acute, not carinate, lateral margin entire; disc convex, median line distinctly impressed in its entire length and on each side in front of

base two vague impressions, surface very densely subrugosely punctate; elytra distinctly striate, the intervals flat, densely subrugosely punctate; prosternum opaque, very densely punctate, propleuræ more coarsely, less densely punctate, more shining; metasternum and abdomen more densely and less coarsely punctured than the propleuræ; legs ferruginous, femora darker. Length .18 - .22 inch; 4.5 - 5.5 mm.

In addition to the characters of the table this species is distinguished from *terminalis* by the distinct median impressed line of the thorax.

Occurs in Canada, Pennsylvania and Missouri.

H. terminalis Lec.—Form moderately elongate, slightly narrower behind, piceous black, subopaque, sparsely clothed with cinereous yellow pubescence; antennæ ferruginous, nearly as long as half the body, joints two and four nearly equal, third a little longer, joints four to ten very gradually longer and broader, the eleventh equal to (♀) or longer than the two preceding (♂); head convex, densely rugosely punctate, front finely carinate, the carina extending nearly to the occiput; clypeus rather flat, narrower at base than the distance to the eyes; thorax wider than long, gradually narrower in front, sides nearly straight, slightly arcuate near the front angles, disc moderately convex, densely subrugosely punctate, median line feebly impressed at base, a slight rounded impression on each side of the middle; elytra striate, the intervals very slightly convex and densely rugosely punctate; prothorax beneath opaque, the sides more coarsely punctate; metasternum and abdomen rather densely finely punctate; legs brownish, femora darker. Length .16 inch; 4 mm.

This species is usually smaller than the preceding and resembles it closely in facies. Specimens have been reared from small branches of Hickory.

Occurs in Canada.

SCHIZOPHILUS Bonv.

Form oblong, subdepressed, slightly narrower posteriorly; antennæ much shorter than half the body, the outer joints subserrate, first joint stout, second one-third as long, third one-half longer than the second and nearly equal to the next two, joints four to ten very gradually longer and broader, eleventh one-half longer than the tenth, acute at tip; head deeply inserted, but prominent in front; clypeus broad at base, deeply obliquely impressed each side, truncate at middle, deeply sinuate each side so as to appear trilobed; prothorax narrower in front, lateral margin entire, prosternal sutures straight well marked, slightly excavated in front as in *Elater*, prosternum slightly lobed in front, sinuate each side near the suture; metasternal episterna parallel, the epimera invisible; hind coxal plates broad, triangular; legs moderate, tarsi slender, the fourth joint obliquely truncate, the first joint of the posterior pair as long as the next three; claws slender, slightly broader at base.

This genus is easily known from any other in our fauna by the form of the clypeus. But one species is known.

S. subrufus Rand.—Color pale ferruginous, feebly shining, very inconspicuously pubescent; antennæ passing slightly the hind angles of the thorax; head coarsely and densely punctured; clypeus not wider at base than half the distance to the eye; thorax as wide as long, slightly narrowed in front, sides straight, arcuate at the front angles, hind angles acute, not carinate, disc moderately convex, a slight median depression posteriorly, surface coarsely and densely punctate; elytra finely striate, the intervals flat, sub-biseriately rugosely punctate; body beneath moderately densely punctate. Length .32 inch; 8 mm.

This is rather an inconspicuous species, resembling, at first sight, some of the paler varieties of *Dolopius lateralis*. It seems to be extremely rare. I have seen but two specimens.

Occurs in Canada and New York.

EPIPHANIS Esch.

Form rather elongate, parallel at middle, narrowed at each extremity; antennæ slender, not serrate, the last four joints abruptly longer, varying in length in the sexes, joints four to seven small, not longer than wide; clypeus arcuate in front, as wide at base as the distance to the eyes; eyes round, feebly prominent, limited in front by a slight groove; prothorax wider than long, narrower in front; scutellum truncate at tip; prosternal sutures straight, well defined in their whole extent, the propleuræ vaguely grooved near the side margin, the marginal ridge acute and entire; metathoracic episterna parallel, the epimera invisible; hind coxal plates very broadly dilated internally, very narrow externally; legs moderate, tarsi slender, the fourth joint obliquely truncate, but not lobed beneath; the first joint of the hind tarsi as long as the next three, claws broader at base.

From the description of the antennæ Bonvouloir seems to have known only the female.

There is but one species known, and which seems very widely distributed.

E. cornutus Esch.—Form elongate, parallel at middle, attenuate at either extremity, piceous, feebly shining, sparsely clothed with brownish pubescence; antennæ ferruginous, a little longer than half the body ♂ or shorter ♀; head coarsely and densely punctured, carinate at middle, the carina more elevated in front; prothorax wider than long, gradually arcuately narrowed in front, hind angles not carinate, disc convex, with a feeble median impression posteriorly, surface moderately, coarsely, but not densely punctured; elytra striate, intervals slightly convex, densely but not rugosely punctate; body beneath more shining than above, rather finely, densely punctate, the propleural triangle comparatively smooth; legs brownish. Length .14 - .24 inch; 3.5 - 6 mm.

Male. Antennæ a little longer than half the body, second joint longer than the third, third nearly square, four to seven subequal, a little shorter than the third and broader than long, joint eight a little wider than the seventh and nearly as long as the preceding four, joints nine, ten and eleven successively, a little longer.

Female. Antennæ a little shorter than half the body, joints one to seven as in the male, joints eight, nine and ten equal, each equal to joints six to seven together, joint eleven slightly longer.

This insect resembles, at first glance, some of our smaller Melanoti, and is easily known among all our Eucnemidæ by its antennal structure and the frontal crest.

Occurs from Alaska to the mountain regions of Pennsylvania, also in New Mexico.

PHLEGON Laporte.

Form oblong, elongate; antennæ a little shorter than half the body, first joint moderately thick, second small, third shorter than half the first and nearly as long as the next two, four to eight small, but at least a little longer than wide, last three joints abruptly much longer and broader, the last joint longest; eyes round, moderately prominent; clypeus inflexed, rather broad at base, apical margin entire, arcuate; prothorax wider than long, lateral marginal line nearly entire, beneath without antennal grooves; scutellum longer than wide, truncate at tip; elytra striate; prosternum arcuate at tip, acute; metathoracic episterna moderately wide, parallel, the epimera not visible; posterior coxal plates very broad internally; tarsi slender, the first joint of the middle and posterior pairs as long as the next three, the joints not lobed beneath; claws slender, simple.

In Bonvouloir's description the fourth joint is said to be "excavate-emarginate," which is not true of our species. Phlegon may be readily known by the suddenly elongate last three joints of the antennæ.

Two species are known to me.

Thorax arcuately narrowed from base to apex; hind coxal plates at the widest portion at least one-half as wide as the length from the side to the middle. **heterocerus.**

Thorax parallel behind, sides arcuate in front; hind coxal plates less than half the width of the coxa..... **Ulkei.**

P. heterocerus Say.—Form oblong-elongate, a little more obtuse in front, gradually narrower posteriorly, ferruginous brown, feebly shining, sparsely clothed with fulvous pubescence; antennæ nearly reaching the middle of the body ♂, shorter ♀; head coarsely and densely punctured, front broadly impressed, a feeble impressed line on the vertex; thorax one-third wider than long, arcuately narrower from base to apex, hind angles not carinate; disc convex, a vague median impressed line posteriorly, surface with moderate punctuation, rather closely placed; elytra narrower posteriorly, surface distinctly, but finely striate, the intervals slightly convex, densely punctate, the punctures finer than on the thorax but rougher; body beneath more shining than above, punctuation, dense and rather fine. Length .40 - .44 inch; 10 - 11 mm.

Male.—First joint of antennæ as long as the next three, second small, partly concealed behind the first, half as long as the third, third as long as the next two, which are nearly equal, six, seven and eight equal, quadrate, nine and ten equal, together as long as the preceding six, eleventh joint long, equal to the preceding two, obliquely impressed at its anterior two-thirds.

Female.—Joints one to eight as in the male, joints nine to eleven together a little longer than three to eight together, joints nine and ten broader and equal the tenth more slender and a little longer.

The general aspect of this insect is that of some of our brown Elaters. As will be seen above the sexes are quite different in the form of the antennæ; the male seems rare.

Occurs in Maryland, Pennsylvania and Indiana (Say).

P. Ulkei n. sp.—Form oblong, parallel, equally obtuse before and behind, dark brown, moderately shining, sparsely clothed with short fulvous pubescence; antennæ shorter than half the body ♀; head coarsely and densely punctured, front slightly depressed, a feeble impressed vertical line; thorax one-fourth wider than long, sides behind straight and parallel, apical third arcuate, hind angles not carinate; disc convex, a feeble median impressed line, nearly obliterated at middle, surface moderately punctured, densely toward the sides and base, more sparsely at middle; elytra parallel, obtuse at apex, narrowing at apical fourth, distinctly finely striate, the intervals flat, densely punctate, the punctures finer than on the thorax, but not rugose; body beneath densely and rather finely punctate. Length .38 - .40 inch; 9.5 - 10 mm.

Male.—Antennæ with first joint as long as the next three, second small, partly concealed behind the first, half as long as the third, third equal to the next two, which are equal sixth, seventh and eighth a little shorter, equal, ninth equal to sixth, seventh and eighth together, tenth shorter than the ninth, the eleventh longer.

Female.—Third joint of antennæ nearly as long as the next two, fourth and fifth equal, sixth, seventh and eighth subequal, longer than wide, each a little shorter than the fifth joint, ninth broader than the eighth and as long as the three preceding, tenth a little shorter, eleventh longer and more slender than the ninth.

Broader and more obtuse than *heterocerus*, with finer punctuation and pubescence, and with narrower hind coxal plates.

Occurs in Ohio; given me by Mr. Ulke.

CRYPTOSTOMA Latr.

Form oblong, parallel; antennæ varying in the sexes; head rather deeply inserted, eyes transverse; clypeus narrowed at base, narrower than the distance to the eyes, apical margin broadly arcuate, mandibles presenting a narrow face externally; prothorax a little wider than long, lateral margin distinct in its entire length; scutellum oval; elytra striate; prosternal sutures straight, well defined, very slightly divergent, propleural region triangular, the apex truncate, not sulcate for the antennæ; metasternal episterna moderately wide, parallel, the epimera not visible; hind coxal plates gradually but widely dilated internally; legs moderate; tarsi slender, the first joint as long as the next three, the fourth simple, claws simple.

The only genera in our fauna to which this is allied are Anelastes and Phlegon, from either of which it may be so easily known as not to require special comparison here.

One species is known to me, and the specimen is a female, and the following description of the antennæ applies to that sex alone:

C. Dohrni Horn.—Oblong, moderately elongate, parallel, equally obtuse at either extremity, color bright blood red, elytra black, a humeral spot and the apical fifth red, beneath red, sides of body and abdomen black, surface finely pubescent, the pubescence similar in color to the surface; antennæ piceous, the basal joint red, not passing the hind angles of the thorax, first joint stout, equalling the next two, second small, partly concealed, third nearly as long as the next two, four to eight equal in length, very gradually shorter, nine to eleven a little wider, the last joint abruptly truncate; head moderately convex, coarsely and closely punctate, a vague triangular flattening above the base of the clypeus; thorax a little wider than long, sides parallel at basal third, then arcuately narrowing to the front, hind angles very little prolonged, not carinate, disc moderately convex, a transverse, slightly oblique depression on each side near the middle, another on each side beginning at the base opposite the middle of each elytron extending in an arcuate manner forward and outward, surface densely and moderately coarsely punctate; elytra striate, the striæ entire except the second and third, distinctly punctate intervals flat, slightly convex near the base, densely and slightly roughly punctate; body beneath nearly equally punctate throughout, the punctures not dense; legs red. Length .60 inch; 15 mm.

In the other species of the genus the antennæ are otherwise constructed in the male, the third joint having a lobe or process near the base.

This species is the only brightly colored form in our fauna. The specimen in my cabinet was given me by Dr. C. A. Dohrn, who possesses another, which was said to have been collected at San Diego, Cal., but as I have found at least one other species in the same lot from Yucatan, this species may be from that region.

ANELASTES Kby.

Form oblong, convex, slightly narrower behind; antennæ extending very little beyond the hind angles of the thorax, joints four to ten short, nearly equal, submoniliform, the last joint a little longer, abruptly acuminate at tip; head deeply inserted, eyes entire, not very convex, clypeus short, arcuate in front, much narrower at base than the distance to the eyes; prothorax broader than long, slightly narrower in front, sides arcuate, lateral margin indistinct; scutellum triangular, obtuse at tip; propectus without antennal grooves, prosternal sutures straight behind, arcuate near the front; prosternum rather broad between the coxæ, obtuse at tip; metasternal episterna broad, slightly narrower in front; hind coxal plates extremely narrow externally, rectangularly dilated at inner third; legs moderate, tibiæ slightly broader at tip; tarsi slender, not lobed beneath, first joint of the posterior pair equal to the next two, claws slender.

One species is known in our fauna.

A. Druryi Kirby.—Castaneous or rufo-ferruginous, opaque or very feebly shining, sparsely clothed with almost imperceptible brown pubescence; head finely but not densely granulate, front with a finely impressed line; thorax broader than long, but variable in its extent, slightly narrower in front, sides arcuate, but variably sinuate in front of the hind angles, which are slightly di-

vergent, not carinate; disc convex, a median impressed line more distinct posteriorly, surface granulate, but not densely; elytra deeply punctato-striate, intervals convex, finely punctate and granular near the base; body beneath densely, very finely punctate, the sides of the propectus granular. Length .34 - .50 inch; 8.5 - 12.5 mm.

Male.—Posterior tibiæ fimbriate with rather long yellowish hairs at apical third of inner edge; first joint of hind tarsi fimbriate beneath.

Female.—Posterior tibiæ and tarsi not fimbriate.

There is considerable variation in form, size and color in this insect, and specimens often occur with four depressions on the disc of thorax. It is absolutely impossible to distinguish two species in our fauna.

Bonvouloir mentions the occurrence of a specimen in Astrabad which he cannot distinguish from ours, and the differences given to separate *barbarus* seem more forced than real.

Occurs from Vancouver eastward to Canada and in the Atlantic region as far south as Georgia.

CEROPHYTINÆ.

Head flat above, front gibbous, slightly prominent; clypeus inflexed, mouth inferior, antennæ pectinate in the males, strongly serrate in the female; elytra wider at base than the thorax; anterior coxal cavities narrowly open behind, the posterior coxæ depressed without plates, the trochanters rather long, claws pectinate at base.

Bonvouloir correctly remarks that the curious characters of the genus Cerophytum have caused some discussion on the position it should occupy. He admits it among the Eucnémides, but as a distinct group. Lacordaire (Genera iv, p. 244) makes it the type of a distinct family, which he places between the Cebrionides and Rhipicerides. In this I think Lacordaire more nearly correct than Bonvouloir, at the same time a relationship seems to exist with the Dascyllidæ, especially the tribe Artematopini (*Macropogonini* Lec.)

One genus is known.

CEROPHYTUM Latr.

Eyes large, round, prominent; labrum not visible; mandibles slender, arcuate, prominent, acute at tip; last joint of maxillary palpi securiform; thorax transverse, the hind angles slightly prominent, the lateral margin very obtuse; scutellum triangular; prosternum lobed in front, the sutures simple, slightly arcuate, but not divergent in front, the apical process imperfectly received in the excavation of the mesosternum; metasternal episterna gradually wider behind, epimera not visible; posterior coxæ on the same plane as the ventral segments, the outer extremity in contact with the elytra; legs moderate, the anterior femora grooved

on the lower edge for the tibiæ, the trochanters of the anterior legs small, of the middle longer, of the posterior nearly as long as the femur; tibiæ slender, the spurs distinct; tarsi not elongate, rather flat, the first joint of the posterior pair as long as the next three, the fourth excavate-emarginate, claws pectinate in their basal half; body alate.

The two species in our fauna may be distinguished in the following manner:

Antennæ pectinate.....2.
Antennæ serrate.....3.
2.—The pectination beginning on the third joint.....**pulsator** ♂.
The pectination beginning on the fourth joint.....**convexicolle** ♂.
3.—Third joint of antennæ a little longer than the fourth.....**pulsator** ♀.
Third joint as long as the next two.....**convexicolle** ♀.

In addition it will be observed that the claws are thicker at base in *pulsator*, and the pectinations numerous, while in *convexicolle* the claws are slender and pectinations not more than two or three.

C. pulsator Hald.—Oblong, moderately convex, black, feebly shining, sparsely clothed with short cinereous pubescence; antennæ piceous, a little shorter than half the body; head densely punctate, rugose; clypeus narrower at base, obtusely elevated along its middle; thorax very much broader than long, sides strongly arcuate in front, slightly convergent posteriorly, the hind angles slightly everted, disc convex, coarsely and densely punctured; elytra wider at base than the thorax, the humeri distinct but obtuse, sides parallel, arcuately narrowing at apical third, disc moderately convex, deeply striate, the striæ coarsely and closely punctate, intervals flat, densely punctate and slightly rugose; body beneath densely and rather finely punctate, finely pubescent, metasternum more coarsely punctate; legs piceous, tarsi ferruginous. Length .28 - .34 inch; 7 - 8.5 mm.

Male.—First joint of antennæ stout, second small, triangular, joints three to ten subequal, each with a clavate branch arising from the base in front, that from the third a little shorter than the others, eleventh joint clavate, a little longer than the preceding two.

Female.—First joint stout, second small, third longer than the fourth, joints four to ten dentate within, the eleventh joint a little longer than the tenth.

Occurs from Pennsylvania to Illinois and North Carolina; very rare.

C. convexicolle Lec.—Oblong, moderately elongate, black, subopaque, very sparsely cinereous pubescent; antennæ shorter than half the body, piceous; head coarsely, densely punctate; clypeus narrow at base, obtusely carinate along the middle; thorax much broader than long, sides in front arcuate, posteriorly slightly convergent, the hind angles slightly prominent, disc convex, coarsely, densely and subrugosely punctured; elytra wider at base than the thorax, the humeri distinct but rounded, sides parallel, arcuately narrowing at apical third, disc moderately convex, striæ not deep, coarsely and closely punctate, the intervals flat, finely but not densely punctured, slightly wrinkled transversely; body beneath more shining, the punctuation rather fine but not dense, coarser on the prosternum; legs brownish. Length .26 - .28 inch; 6.5 - 7 mm.

Male.—First joint of antennæ stout, second small, third longer than the following, triangular, the apical angle very slightly prolonged, joints four to ten with a branch of clavate form arising from the base of each, eleventh joint moderately elongate, clavate.

Female.—First joint stout, second small, third elongate, triangular, nearly as long as the next two, joints four to ten broader than long, serrate within, joint eleven elongate oval, obtuse at tip and not as long as the preceding two.

This species closely resembles the preceding, but is more elongate, the elytral striæ less deep, and the intervals less densely punctured. The structure of the antennæ will readily distinguish the two species.

Of this species I have seen but two specimens, the male collected by Dr. Schaum near Sacramento, now in the cabinet of Dr. LeConte, a female collected by myself at Fort Tejon, California.

PEROTHOPINÆ.

Head moderately convex, front slightly narrowed by the insertion of the antennæ under distinct supra-antennal ridges; labrum short, transverse, connate with the front, the suture almost entirely obliterated, the clypeus very short, as in Elateridae; mandibles acute, arcuate, fimbriate on the outer side; prosternum slightly lobed in front, the mucro short; hind coxæ laminate, claws pectinate.

The difficulties which authors have realized in dealing with Perothops have already been alluded to. I can only repeat what I have elsewhere published that the genera Eucnemis, Elater, Cebrio, Perothops and Cerophytum do not represent such different types of structure as to require them to be made separate families. They are indeed very closely related, and the discussion which has prevailed is indicative of that fact. That they differ sufficiently to be separated in groups of less than a family value is evident, but they should be associated as modifications of one type, and for that aggregation I prefer the name Elateridae.

In Perothops the structure of the front of the head is practically the same as in Cebrio. In both the clypeus is quite short as in Elateridae, and to its front margin is fixed the labrum, short and transverse, immovable in both. The suture is very distinct in Cebrio, but almost obliterated in Perothops, where it is only visible in immature specimens, or those softened with solution of caustic potassa.

In the Eucnémides, however, the clypeus is of different form and the suture between it and the front is a short distance below the narrowest part between the antennæ, while the labrum is at most very small and retracted, practically invisible with very rare exception.

In both Perothops and Cerophytum the claws are pectinate, while in all the genera of Eucnémides they are either simple or at most broadly toothed at base.

PEROTHOPS Erichs.

Head moderately convex, clypeus short not inflexed, the labrum continuous and connate with it; mandibles prominent, arcuate, acute at tip, ciliate externally; eyes oval, moderately prominent, entire; maxillary palpi moderately long, the last joint securiform; antennæ slightly narrowing the front, arising under rather prominent ridges, the first joint elongate conical, second one-third as long, obconical, third two-thirds as long, fourth longer than second, joints four to eleven differing in the two species, the eleventh truncate at tip; thorax broader than long, the lateral margin indistinct, hind angles not prolonged; scutellum oval; elytra striate; prosternum slightly lobed in front, the mucro short, the sutures straight, slightly divergent; mesosternal side pieces diagonally divided, equal; metasternal episternum moderate, parallel; hind coxæ with plates broader internally; legs moderate, tibiæ slightly broader at tip, the spurs small; tarsi shorter than the tibiæ, slightly compressed, the joints obliquely truncate at tip, joints one to four gradually shorter, the first, however, stouter, especially on the posterior pair, claws pectinate their entire length; body winged.

Two species are known to me in our fauna.

Lateral marginal line of thorax visible only near the hind angles; antennal ridges transverse, not meeting on the front; hind coxal plates more abruptly dilated internally and wider; joints four to nine of antennæ gradually longer, ten to eleven equal and a little shorter..... **mucida.**

Lateral marginal line of thorax visible from the hind angles half way to the front; antennal ridges oblique, meeting on the front; hind coxal plates very gradually broader internally; joints four to eleven of antennæ equal in length. **Wittieki.**

In both species the antennæ are slightly flattened externally.

While there are but two species above, a third is in the "Catalogus" credited to California, and which is figured by Lacordaire (Atl. pl. 41, fig. 3), but not described, under the name *cervina*. This does not bear the remotest resemblance to either of our species, and I think there must be some error on the part of Lacordaire, as the species mentioned in the Dejean catalogue (third ed. p. 99) is probably our common *mucida* sent to him by Maj. LeConte. That *cervina* Dej. is *mucida* Gyll. was also the opinion of Erichson (Germ. Zeitschr. iii, p. 117).

P. mucida Gyll.—Form oblong, parallel, piceous ♂ or ferruginous brown ♀, feebly shining, sparsely clothed with cinereous pubescence; head moderately convex, the punctuation intermixed, the coarse sparse, the fine dense; antennæ as long as half the body ♂, a little shorter ♀; thorax wider than long, narrower in front, the sides feebly arcuate ♂, or more strongly ♀, with a slight sinuation

in front of the hind angles which are subacute, the lateral margin extremely feeble and slightly inferior: disc convex, a feeble depression of the median line posteriorly, the surface with an inconspicuous intermixed punctuation, somewhat rugose at the sides; elytra striate, striæ punctate, intervals flat and equal ♂, or alternately slightly narrower and more convex ♀, the surface inconspicuously finely punctate, with somewhat coarser punctures intermixed; body beneath very finely and moderately densely punctate, with slightly larger punctures intermixed, which are larger on the sides of prothorax; legs similar in color to the surface. Length .42 - .80 inch; 10.5 - 20 mm.

In addition to the fine pubescence there are sparsely placed, semi-erect, short hairs. The males are known by their usually darker color, more slender form, antennæ longer, and the elytral intervals equal.

Occurs from Pennsylvania to Florida.

P. Wittieki Lec.—Form oblong, parallel, rather robust, piceous or brownish, clothed with fine yellowish cinereous sericeous pubescence; antennæ nearly as long as half the body ♂, a little shorter ♀; head coarsely, sparsely punctate, with fine punctures between, front vaguely longitudinally impressed, supra-antennal ridges nearly transverse, united across the front; thorax much wider than long, narrower in front, sides strongly arcuate, slightly sinuate in front of the hind angles which are subacute, lateral margin distinct from the hind angles two-thirds to apex; disc very convex, median line slightly impressed posteriorly, surface not densely punctate, the intermediate finer punctuation very indistinct; elytra very little wider at base than the thorax, parallel, narrower at apical third, striate, striæ indistinctly punctate, the intervals slightly convex equal, sparsely punctate, the finer intermediate punctuation almost obsolete; body beneath densely finely punctured with coarser punctures sparsely placed, which are coarser on the prosternum, the pubescence fine, silken and moderately dense; legs similar in color to the body. Length .62 - .80 inch; 15.5 - 20 mm.

This species greatly resembles *mucida;* it has, however, a more robust facies, the pubescence is closer and more silken. The most obvious structural differences are those given in the table.

Occurs in the middle region of California.

Synonymy and Bibliography.

EUCNEMINÆ.

MELASIS Oliv.

Olivier, Entom. ii, 30.

M. pectinicornis Mels., Proc. Acad. ii, p. 148; Lec., Trans. Am. Philos. Soc. x, p. 411; Bonv., Mon. p. 92, pl. 4, fig. 5.

M. rufipennis n. sp.

THAROPS Cast.

Castelnau, Silberm. Rev. Ent. iii, p. 168.

T. ruficornis Say (*Melasis*), Journ. Acad. iii, p. 166; edit. Lec., ii, pp. 107 and 626; Lec., loc. cit. p. 411; Bonv., Mon. p. 106, pl. 5, fig. 2.

obliqua Say (*Eucnemis*), Trans. Am. Philos. Soc. vi, p. 187; edit. Lec., ii, p. 626; Lec., loc. cit. p. 412; Bonv., Mon. p. 105, pl. 5, fig. 1.

T. nubila Bonv., Mon. p. 108, pl. 5, fig. 3.

DENDROCHARIS Guér.

Guérin, Ann. Ent. Soc. de Fr. 1843, p. 193.

D flavicornis Guér., Ann. Ent. Soc. Fr. 1843, p. 193, pl. vi, figs. 60 and 61; Lec., (*Galba*) loc. cit. p. 418; Bonv., Mon. p. 802, pl. 38, fig. 7.

STETHON Lec.

LeConte, Proc. Acad. 1866, p. 386.

S. pectorosus Lec., loc. cit. p. 386; Bonv., Mon. p. 146, pl. 6, fig. 5.

S. errans n. sp.

EUCNEMIS Ahrens.

Ahrens, Neue Schr. Gesell. Halle, ii, 2, 40.

E. americana n. sp.

DELTOMETOPUS Bonv.

Bonvouloir, Monog. des Eucnémides, p. 171.

D. amœnicornis Say (*Eucnemis*), Trans. Am. Philos. Soc. vi, p. 189; edit. Lec., ii, p. 628; Lec., Proc. Acad. 1852, p. 48; Trans. Am. Philos. Soc. x, p. 418; Bonv., Mon. p. 182, pl. 7, fig. 5 ♀, 8 ♂.

clypeatus ♀ Say (*Elater*), Ann. Lyc. i, p. 266; edit. Lec., i, p. 399; Lec., Trans. Am. Philos. Soc. x, p. 417.

? *monilicornis* Mann., (*Eucnemis*) Eucn. gen. ins. p. 26, pl. 2, fig. 1; Bonv., Mon. p. 876.

D. rufipes Mels., (*Dirhagus*) Proc. Acad. 2, p. 150; Lec., (*Fornax*) List, p. 44; Bonv., Mon. p. 878.

DROMÆOLUS Kies.

Kiesenwetter, Naturg. der Ins. Deutschl. iv, p. 197.

D. californicus Bonv., Mon. p. 890.

D. sejunctus Bonv., Mon. p. 266, pl. 12, fig. 3.

D. salsus Bonv., Mon. p. 267.

D. nitens n. sp.

D. basalis Lec., (*Fornax*) Proc. Acad. 1866, p. 387; Bonv., Mon. p. 888.

D. striatus Lec., (*Fornax*) Proc. Acad. 1852, p. 47; Trans. Am. Philos. Soc. x, p. 417; Bonv., Mon. p. 253, pl. 22, fig. 6.

D. Harringtoni n. sp.

D. cylindricollis Say (*Eucnemis*), Trans. Am. Philos. Soc. vi, p. 188; edit. Lec., ii, p. 627; Lec., (*Fornax*) Trans. Am. Philos. Soc. x, p. 417; Bonv., Mon. p. 250, pl. 11, fig. 4.

D. Marseuli Bonv., Mon. p. 268, pl. 12, fig. 4.

D. pusillus n. sp.

FORNAX Cast.

Castelnau, Silberm. Rev. Ent. iii, p. 172.

F. badius Mels., (*Dirhagus*) Proc. Acad. ii, p. 150; Lec., Trans. Am. Philos. Soc. x, p. 416; Bonv., Mon. p. 339, pl. 15, fig. 6.

noritius Bonv., (*Dromæolus*) Mon. p. 270.

F. Hornii Bonv., Mon. p. 891.

F. calceatus Say (*Eucnemis*), Trans. Am. Philos. Soc. vi, p. 188; edit. Lec., ii, p. 626; Bonv., Mon. p. 406, pl. 20, fig. 4.

spretus Lec., (*Isarthrus*) Proc. Acad. 1852, p. 48; Trans. Am. Philos. Soc. x, p. 417.

F. bicolor Mels., (*Hylocharus?*) Proc. Acad. ii, p. 149.

luridus Chev., Ann. Ent. Soc. Fr. 1867, p. 592; Bonv., Mon. p. 490, pl. 20, fig. 1.

F. molestus Bonv., Mon. p. 376, pl. 18, fig. 4.

F. orchesides Newm., (*Onychodon*) Ent. Mag. v, p. 384; Lec., Trans. Am. Philos. Soc. x, p. 416; Bonv., Mon. p. 377, pl. 18, fig. 5.

bicolor ‡ Lec., Trans. Am. Philos. Soc. x, p. 416.

F. infelix n. sp.

PHÆNOCERUS Bonv.

Bonvouloir, Monog. des Eucnémides, p. 285.

P. americanus Horn, Trans. Am. Ent. Soc. 1872, p. 147.

ADELOTHYREUS Bonv.

Bonvouloir, Monog. des Eucnémides, p. 609.

A. Dejeani Bonv., Mon. p. 617, pl. 30, fig. 3.

MICRORHAGUS Esch.

Eschscholtz, Silberm. Rev. Ent. iv, table.

M. pectinatus Lec., Proc. Acad. 1866, p. 387; Bonv., Mon. p. 535.

M. audax n. sp.

M. imperfectus Lec., Proc. Acad. 1852, p. 48; Trans. Am. Philos. Soc. x, p. 419; Bonv., Mon. p. 545, pl. 26, fig. 3.

M. subsinuatus Lec., Proc. Acad. 1852, p. 48; Trans. Am. Philos. Soc. x, p. 419; Bonv., Mon. p. 547.

triangularis Harris (*Eucnemis*), Trans. Hartf. Soc. N. H. p. 72.

M. oblitus Bonv., Mon. p. 552.

M. triangularis Say (*Elater*), Journ. Acad. iii, p. 170; edit. Lec., ii, p. 110; (*Eucnemis*) Say, Trans. Am. Philos. Soc. vi, p. 189; edit. Lec., ii, p. 628; Lec., Trans. Am. Philos. Soc. x, p. 419; Bonv., Mon. p. 551, pl. 26, fig. 6.

M. impressicollis Bonv., Mon. p. 599, pl. 29, fig. 5.

mucidus ♀ Bonv., Mon. p. 593.

M. Bonvouloiri Horn.

humeralis ‡ Bonv., Mon. p. 607, pl. 29, fig. 8.

arduus ‡ Bonv., in cab. Sallé.

M. humeralis Say (*Eucnemis*), Trans. Am. Philos. Soc. vi, p. 189; edit. Lec., ii, p. 628; Harris, Trans. Hartf. Soc. N. H. p. 72; Lec., Proc. Acad. vi, p. 48; Trans. Am. Philos. Soc. x, p. 420.

meticulosus Bonv., Mon. p. 604, pl. 29, fig. 6.

ENTOMOPHTHALMUS Bonv.

Bonvouloir, Monog. des Eucnémides, p. 513.

E. rufiolus Lec., (*Microrhagus*) Proc. Acad. 1866, p. 387; Bonv., Mon. p. 523.

pallens Bonv., Mon. p. 518.

XYLOBIUS Latr.

Latreille, Ann. Ent. Soc. Fr. 1834, p. 124.

X. cylindriformis Horn, Trans. Am. Ent. Soc. 1871, p. 341.

HYLOCHARES Latr.

Latreille, Ann. Ent. Soc. Fr. 1834, p. 127.

H. nigricornis Say (*Melasis*), Journ. Acad. iii, p. 165; edit. Lec., ii, p. 107; Lec., Proc. Acad. 1852, p. 47; Trans. Am. Philos. Soc. x, p. 413; Bonv., Mon. p. 770, pl. 36, fig. 3.

SARPEDON Bonv.

Bonvouloir, Monog. des Eucnémides, p. 774.

S. scabrosus Bonv., Mon. p. 774, pl. 37, fig. 5.

NEMATODES Latr.

Latreille, Fam. Nat. p. 248.

N. atropos Say (*Eucnemis*), Trans. Am. Philos. Soc. vi, p. 187; edit. Lec., ii, p. 626; Lec., (*Emathion*) Proc. Acad. 1852, p. 47; Trans. Am. Philos. Soc. x, p. 414; (*Nematodes*) List, p. 44; Bonv., Mon. p. 657, pl. 31, fig. 6.

N. penetrans Lec., (*Emathion*) Proc. Acad. 1852, p. 47; Trans. Am. Philos. Soc. x, p. 414; (*Nematodes*) List, p. 44; Bonv., Mon. p. 666, pl. 32, fig. 2.

N. punctatus Lec., Proc. Am. Philos. Soc. 1878, p. 404.

N. pavidus n. sp.

N. teres n. sp.

HYPOCŒLUS Esch.

Eschscholtz, Silberm. Rev. Ent. iv, table.

H. frontosus Say (*Eucnemis*), Trans. Am. Philos. Soc. vi, p. 187; edit. Lec., ii, p. 625; Lec., (*Emathion*) Trans. Am. Philos. Soc. x, p. 414; (*Nematodes*) List, p. 44; (*Hypocœlus*) Proc. Acad. 1866, p. 388; Bonv., Mon. p. 697.

canaliculatus Lec., (*Epiphanis*) Proc. Acad. 1852, p. 46.

H. terminalis Lec., Proc. Acad. 1866, p. 387; Bonv., Mon. p. 698.

SCHIZOPHILUS Bonv.

Bonvouloir, Monog. des Eucnémides, p. 708.

S. subrufus Rand., (*Eucnemis*) Bost. Journ. N. H. ii, p. 38; Bonv., Mon. p. 709.

simplex Lec., (*Nematodes*) Proc. Acad. 1866, p. 388.

trilobatus Bonv., Mon. pl. 34, fig. 5.

EPIPHANIS Esch.

Eschscholtz, Zool. Atl. i, p. 10.

E. cornutus Esch. Thon. Arch. ii, p. 35; Zool. Atl. i, p. 10; Mann., Bull. Mosc. 1843, p. 288; Lec., Proc. Acad. 1866, p. 388; Lacord., Atl. pl. 40, fig. 4; Bonv., Mon. p. 705, pl. 34, fig. 3.
cristatus Lec., Proc. Acad. 1852, p. 46; Trans. Am. Philos. Soc. x, p. 415.

PHLEGON Cast.

Castelnau, Hist. Nat. Col. i, p. 254.

P. heterocerus Say (*Eucnemis*), Trans. Am. Philos. Soc. vi, p. 186; edit. Lec., ii. p. 624; Lec., (*Euryptychus*) Proc. Acad. 1852, p. 46; Trans. Am. Philos. Soc. x, p. 415; (*Phlegon*) List, p. 44; Bonv., Mon. p. 747, pl. 36, fig. 3.
P. Ulkei n. sp.

CRYPTONTOMA Latr.

Latreille, Fam. Nat. p. 348.

C. Dohrni Horn, Trans. Am. Ent. Soc. 1878, p. 54; Trans. Am. Ent. Soc. 1882, pl. vi, fig. 13.

ANELASTES Kby.

Kirby, Trans. Linn. Soc. xii, p. 384.

A. Druryi Kby., Trans. Linn. Soc. xii, p. 384; Guérin-Mén., Ann. Ent. Soc. Fr. 1843, p. 177; Lec., Trans. Am. Philos. Soc. x, p. 413; Bonv., Mon. p. 713.
brunneus Latr., (*Silenus*) Ann. Ent. Soc. Fr. 1834, p. 129.
erosus Say (*Elater*), Ann. Lyc. i, p. 258; edit. Lec., i, p. 393.
Latreillei Lec., Proc. Acad. 1852, p. 47; Trans. Am. Philos. Soc. x, p. 413; Bonv., Mon., p. 713, pl. 34, fig. 7.

CEROPHYTINÆ.

CEROPHYTUM Latr.

Latreille, Gen. Crust. et Ins. iv, 375.

C. pulsator Hald., (*Chorea*) Proc. Acad. iii, p. 150; Lec., (*Cerophytum*) Proc. Acad. vi, p. 230; Trans. Am. Philos. Soc. x, p. 421; Bonv., Mon. p. 81.
C. convexicolle Lec., Proc. Acad. 1867, p. 383; Bonv., Mon. p. 83.

PEROTHOPINÆ.

PEROTHOPS Erichs.

Erichson, Germ. Zeitschr. iii, p. 116.

P. mucida Gyll., (*Elater*) Schönh. Syn. Ins. iii, app. p. 133; Erichs. loc. cit. p. 117; Lec., Trans. Am. Philos. Soc. x, p. 424.
muscidus Say (*Elater*), Ann. Lyc. i, p. 256; (*Eucnemis*) Trans. Am. Philos. Soc. vi, p. 186; edit. Lec., ii. p. 624.
unicolor Say (*Elater*, loc. cit.; (*Eucnemis*) loc. cit.; edit. Lec., ii, p. 624.
P. Wittickii Lec., Pacific R. R. Rep. 47th par. Ins. p. 45, pl. i, fig. 18.

Synopsis of the North American Sub-families and Genera of CYNIPIDÆ.

BY WILLIAM H. ASHMEAD.

Family—CYNIPIDÆ.

Head generally small, transverse; labrum very minute; mandibles short, robust, toothed; maxillary palpi 5-jointed, labial palpi 2 to 4-jointed; antennæ slender, filiform, or sub-filiform, inserted on the middle of face, 12 to 16-jointed; thorax generally thick, oval; scutellum large, variable; wings with few nervures, anterior pair with seldom more than three or four cells, posterior pair with but a single thickened vein, occasionally apterous; abdomen petiolate or sub-sessile, oval, elongate oval or compressed, and usually with the second or third segment the largest; ovipositor spiral, hidden within two sheaths or plates; legs ordinary.

Classification of the North American Species.

Authors are by no means agreed in their arrangement of the complexity of forms recognized as *Cynips*, and in the present essay will be found a new classification, in accordance with what seems to me the most natural method and for which I am alone responsible.

The forms peculiar to our fauna seem naturally to divide into two sections, distinguishable from each other by venation and ventral characters as follows:

Section I, GYMNOGASTRI.—Venter visible, or visible for more than half its length; radial area long and narrow.

Section II, CRYPTOGASTRI.—Venter not visible, or with the tip alone occasionally exposed; radial area an equilateral triangle.

The first section includes the true gall makers or *Psenides*, the guest flies or *Inquilines*, and the peculiar genus *Ibalia*.

Their habits as far as known are phytophagous, although the Ibaliæ are supposed to be parasitic on wood-boring larvæ, and by some authors are placed with the *Figitides*. Their characters, however, place them naturally with the phytophagic Cynipidæ.

In the second section are included all the parasitic Cynips or *Figitides;* all are strictly entomophagous.

The North American *Cynipidæ* may be divided into five sub-families of nearly equal value, distinguished by characters given in the following table:

Synoptic Table of the Sub-families.

Section I.—GYMNOGASTRI Ashmead.

* *Radial area long and narrow.*

A.—Radial area closed; abdomen cultriform, segments about equal; venter visible.....Sub-family I, IBALIINÆ.

AA.—Radial area *seldom closed;* second abdominal segment occupying half, or but little more than half the whole surface of abdomen; venter visible. Sub-family II, CYNIPINÆ.

AAA.—Radial area *seldom open;* second abdominal segment occupying the whole or nearly the whole surface; venter not visible its whole length. Sub-family III, INQUILINÆ.

Section II.—CRYPTOGASTRI Ashmead.

** *Radial area an equilateral triangle.*

B.—Abdomen short, globose, or semi-globose; second abdominal segment longer than the others; scutellum round, convex. Sub-family IV, ALLOTRIINÆ.

BB.—Abdomen elongate ovate, compressed, with apex more or less pointed; third abdominal segment the largest; scutellum quadrate, cupuliform or spined.....Sub-family V, FIGITINÆ.

Section I.—GYMNOGASTRI Ashmead.

Sub-family I.—IBALIINÆ.

This group contains one genus, easily recognized by the following characters:

Abdomen cultriform with all the segments about equal, fifth segment in ♀ being much larger than in ♂; wings with the veins more strongly developed than in any other of the Cynipidous groups; radial area very long, narrow and closed; antennæ filiform, ♀ 13, ♂ 15-jointed.

(1) **Ibalia** Latreille.

Sub-family II—CYNIPINÆ.

To this group belong the true gall makers; they produce galls or abnormal deformations and excrescences on various trees and plants; the oak-rose and bramble being particularly subject to their attacks.

It is by far the largest and best known of the different groups, nearly one hundred species having already been described in the North American fauna, which represent thirteen genera.

The genera may be separated with the aid of the following table:

Synoptic Table of the Genera.

A.—Radial area open.

a.—Parapsidal grooves distinct, extending the whole length of mesoscutum.

b.—Thorax not very robust.

c.—Species naked, or not very hairy.

d.—Species shining.

Scutellum with one large fovea across base, radial vein strongly curved and incrassated at tip; antennæ longer than body, filiform; third joint one-third longer than fourth, in ♂ excised, joints long, cylindrical, small at base, gradually thickened and truncate at tip; ♀ 13, ♂ 15-jointed.....(1) **Belonocnema** Mayr.
(*Dryorhizozenus* Ashm.)

Scutellum bifoveate; radial vein almost straight, ending some distance from costal edge; third abdominal segment but slightly shorter than second; antennæ reach the base of abdomen, flagellar joints cylindrical oval, ♀ 13-14, ♂ 14-jointed.....(3) **Diastrophus** Hartig.

Scutellum with two shallow transverse foveæ; wings long, radial vein reaching costal edge, tip slightly bent and obtusely thickened (agamic form with long hairs on antennæ, legs and thorax); petiole in ♂ long; antennæ subfiliform, long, third joint but slightly longer than fourth, ♀ 13-14, ♂ 15-jointed.
(13) **Dryophanta** Förster.

Scutellum with a deep transverse suture, no foveæ; abdomen greatly compressed, knife-edged below; ventral valve long; antennæ ♀ 14-jointed.....(5) ***Tribalia** Walsh.

Scutellum inflated, foveæ shallow and almost confluent; antennæ, third joint shorter than fourth, ♂ 13-jointed.
(4) ***Antistrophus** Walsh.

dd.—Species punctate.

Scutellum with two foveæ; radial vein reaching, or not quite reaching costal edge, tip thickened, obtuse; antennæ: third joint in ♀ twice or one-third longer than fourth, joints beyond eighth oval, cylindrical, or beyond fourth very short; in ♂ long, cylindrical, or oval cylindrical ♀ 12-15, ♂ 14-16-jointed.
(7) **Andricus** Hartig.

†.—Claws with one tooth: antennæ, third joint in ♂ twice or one-third longer than fourth, others long, subequal; in ♂ third joint excised, beyond fourth very short.
Sub-genus **Callirhytis** Förster.

††.—Claws with two teeth; antennæ: third joint one-third longer than fourth, joints to eighth long, cylindrical, subequal, following joints short.....Sub-genus **Andricus** Hartig.

---

* These two genera are unknown to me in nature, and the characters are taken from the author's descriptions.

Scutellum (apterous form) with one fovea; head much broader than thorax, wide back of eyes; abdomen large and long, with third, fourth, fifth and sixth segments subequal; antennæ with joints beyond third short, cylindrical, small at base, truncate at tip, somewhat serrate; (winged form) radial area quite narrow, with the radial vein barely reaching costal edge: antennæ longer and much more slender than in the wingless form, third joint in ♂ greatly excised, following joints short, ♀ 14, ♂ 15-jointed.

(10) **Biorhiza** Westwood.

cc.—Species very hairy.

Scutellum rounded, as broad as long, depressed at base with two small approximate foveæ; wings long, radial vein reaching costal edge; antennæ short, third joint but slightly longer than fourth, eighth and beyond cylindrical oval, ♀ 13-14-jointed.

(8) **Cynips** Linnaeus.

Scutellum rounded, without foveæ, or with a poorly defined one; head very narrow back of eyes; radial vein barely reaches costal edge, tip obtuse; eyes small; legs very hairy, third parapsidal groove wanting; antennæ long, slender, third joint but slightly longer than fourth, others long, subequal to seventh, following short, ♀ 13-14-jointed.....(12) **Holcaspis** Mayr.

aa.—Parapsidal grooves wanting, or very indistinct, not extending the whole length of mesonotum.

bb.—Thorax narrow, head full behind the eyes. Species smooth.

Scutellum without foveæ and ending in a blunt horn; forms apterous, or with rudimentary wings; antennæ ♀ 14-jointed.

(9) **Acraspis** Mayr.

Scutellum with a transverse curved groove at base, no foveæ; face full, cheeks with a distinct groove; antennæ: third joint in ♀ long, slender, cylindrical, others long, cylindrical oval, subequal; in ♂ third joint thickened, excised, following joints short, ♀ 13, ♂ 15-jointed.....(11) **Loxaulis** Mayr.

bbb.—Thorax robust, bulging. Species rugose, not very hairy.

Scutellum quadrate, elevated posteriorly, bifoveate; abdomen globose; radial vein acuminate, ending some distance from costal edge; wings black, or with a large blotch at base of radial area; antennæ short, third joint nearly twice as long as fourth, others short, cylindrical, ♀ 13-14, ♂ 15-jointed.....(6) **Amphibolips** Reinhardt.

bbbb.—Thorax not robust. Species polished.

Scutellum bifoveate; radial vein reaching costal edge; areolet and cubital vein very faint and occasionally obsolete; radial area occasionally obsolete; radial area occasionally entirely closed; antennæ and legs finely pubescent, antennæ long, subfiliform, ♀ 13-15, ♂ 15-16-jointed.....(14) †**Neuroterus** Hartig.

AA.—Radial area closed.

Scutellum bifoveate; ventral valve of ♀ greatly elongated, pointed and shining; antennæ ♀ 14, ♂ 15-jointed..(2) **Rhodites** Hartig.

---

† In *Neuroterus aprilinus* Giraud, the radial area is closed, and in two or three other European species in this genus it is partly closed, but all the American species known to me have an open radial area.

My genus *Dryorhizoxenus* and *Belonocnema* Mayr, are identical, and were described about the same time. While there can be no question raised as to my having forwarded my description for publication first, yet from correspondence with Dr. Mayr I find he has priority in publication, and I have given his name the preference.

Sub-family III.—INQUILINÆ.

All the species in this group are termed guest flies; they are gallivorous and live in the galls made by species of the former subfamily, from which they are hardly distinguishable.

The much larger second abdominal segment and the almost always closed radial area easily distinguish them.

The species in our fauna represent but four genera separated as follows:

Synoptic Table of the Genera.

A.—Radial area closed, scutellum bifoveate.

b.—Face coarsely striate.

Thorax with distinct, almost parallel parapsidal grooves; second abdominal segment occupying nearly the whole surface of abdomen, divided apparently by a very delicate, connate suture; ovipositor sheaths projecting above upper surface of abdomen; antennæ in ♀ 12, ♂ 15-jointed.

(2) **Ceroptres** Hartig.

Thorax with parapsidal grooves converging behind; second abdominal segment occupying the whole surface of abdomen; petiole striate, ovipositor sheaths not projecting; antennæ in ♀ 14, ♂ 15-jointed, second joint in ♂ excised.....(3) **Synergus** Hartig.

bb.—Face not coarsely striate.

Thorax with parapsidal grooves delicate, converging behind; second abdominal segment in ♀ occupying nearly the whole surface of abdomen, in ♂ subequal with third; ventral valve greatly projecting; ovipositor sheaths projecting; antennæ ♀ 12, ♂ 14-jointed.

(1) **Periclistus** Förster.

AA.—Radial area open, scutellum broad, not foveate.

Thorax smooth, without parapsidal grooves; second abdominal segment occupying the whole surface of abdomen; ovipositor sheaths not projecting; antennæ with first joint very short, ♀ 13, ♂ 14-15-jointed.

(4) **Sapholytus** Förster.

Section II.—CRYPTOGASTRI.

Sub-family IV.—ALLOTRIINÆ.

In this group all the species are small, highly polished and closely allied to the Inquilinæ; they are, however, easily distinguished from that group by the subequal second and third abdominal segments and by their very long subfiliform, moniliform antennæ.

But two genera are represented in our fauna, all the species of which are parasitic on plant lice (*Aphididæ*).

The genera may be separated by the following table:

Synoptic Table of the Genera.

A.—Scutellum rounded, smooth, convex, separated from mesonotum by a transverse groove; no foveæ; head wider than thorax; thorax ovoid, stout, without parapsidal grooves; antennæ longer than the body, filiform, ♀ 13, ♂ 14-jointed.....(1) **Allotria** Westwood.

AA.—Scutellum rugose, not separated from the mesonotum by a transverse groove, bifoveate; head wider than thorax; parapsidal grooves almost parallel; antennæ filiform, not longer than body, ♀ 13, ♂ 14-jointed.
(2) **Aegilips** Haliday.

Sub-family V.—Figitinæ.

As in the preceding group the species in this sub-family are highly polished, but the abdomen is much longer and compressed, and the third segment of abdomen is the largest.

The species in our fauna represent five genera, which may be separated by the following table:

Synoptic Table of the Genera.

A.—Scutellum ordinary, bifoveate.

Abdomen elongate, with second and third segments almost equal; petiole long or short, smooth; parapsidal grooves wanting; antennæ filiform, slender ♀ 13, ♂ 14-jointed.....(1) **Anacharis** Dalman.

Abdomen with third segment longest; thorax smooth, striate at sides and very slightly on disc, parapsidal grooves distinct; petiole short, fluted; antennæ moniliform, in ♀ 13, ♂ 14-jointed.....(5) **Figites** Latreille.

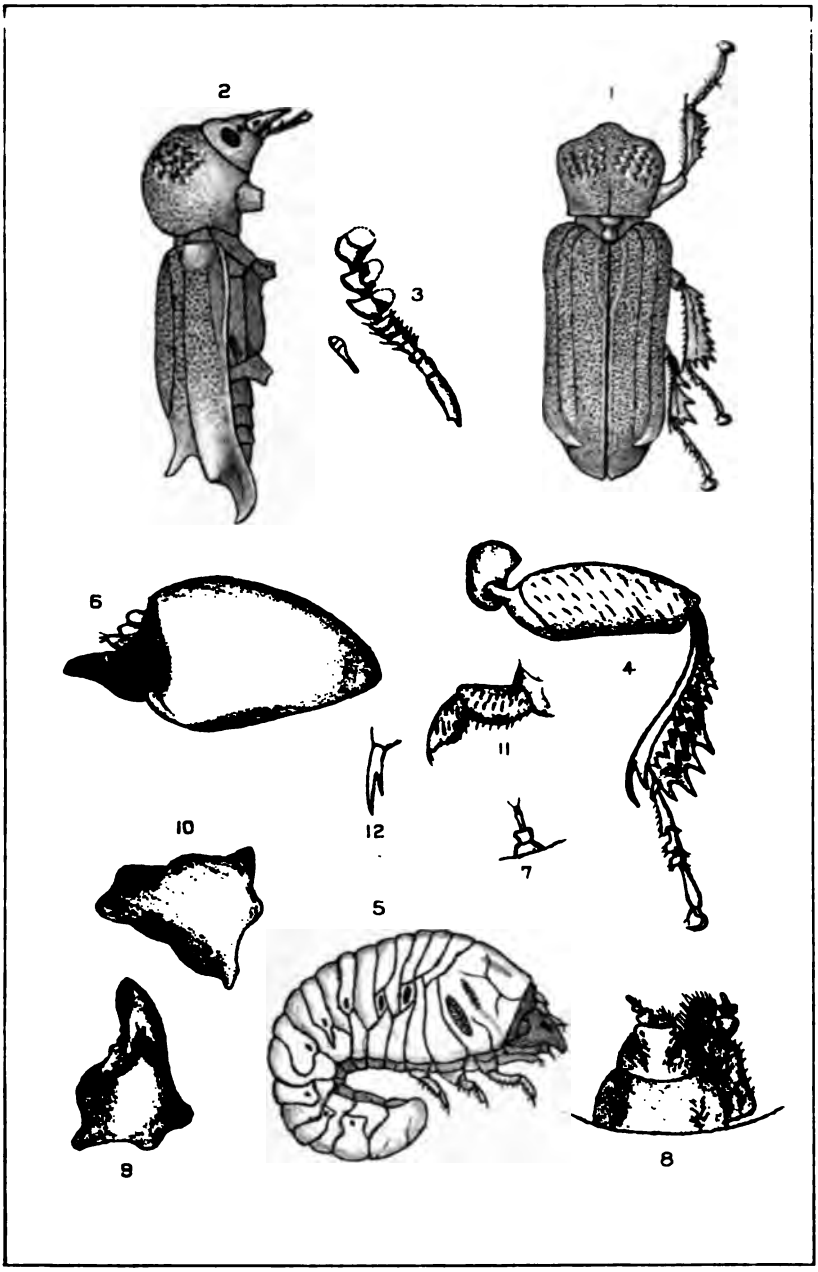
AA.—Scutellum armed with a blunt tooth or spined, bifoveate.

Abdomen with the third segment the longest; petiole short, striate; thorax rugose or carinate; parapsidal grooves distinct; antennæ moniliform or filiform, ♀ 13, ♂ 14-jointed.....(2) **Onychia** Dalman.

AAA.—Scutellum cupuliform, bifoveate; thorax without parapsidal grooves.

Abdomen with the third segment occupying nearly the entire surface; base of abdomen with a hairy girdle; wings pubescent, often ciliate; antennæ moniliform, gradually incrassated, ♀ 13, ♂ 15-jointed.
(3) **Eucoila** Westwood.

Abdomen without hairy girdle at base; scutellum unifoveate; antennæ as in *Eucoila*, but with the three terminal joints suddenly thick.
(4) **Kleidotoma** Westwood.


2
1
3
6
4
11
12
7
10
5
9
8

A monograph of the species of CHRYSOBOTHRIS inhabiting the United States.

BY GEORGE H. HORN, M. D.

Since the publication of the "Revision of the Buprestidæ of the United States," by Dr. LeConte (Trans. Amer. Philos. Soc. xi, 1859), the species of Chrysobothris have remained practically undisturbed. There have been in the meantime but six species described, of which two are valid. The material has been allowed to accumulate in our cabinets until enough has been obtained to supply defects in the original series and to render it probable that very few more new species will be discovered. Nor has it appeared that science has seriously suffered by retaining many of the species more than twenty years without names, and it is highly probable that much unnecessary synonymy has been avoided by the aggregation of series, which at the same time indicate the great variability of many of our species and the real characters separating them. The publication of descriptions of isolated species in advance of any monographic work, or preparation for it, must necessarily be done at the risk of insufficiency as important characters are frequently developed by serious study which are overlooked in the haste of descriptive work. Chrysobothris is no exception, and the books are full of descriptions, some of which having no value in themselves are useful merely in fixing specific names in our literature until comparison places them in the grand crowd of synonyms. Our species have quite their share of synonymy, principally due to Laporte and Gory; for, of the twenty-two species mentioned by them together or by Gory in the supplement, but five remain valid and one (*errans*) does not belong to our fauna, and it may be added that the figures in their work leave much to be desired and the descriptions are, for the most part, very insufficient.

Anterior to the "Revision" above cited the species described by Laporte and Gory were made the subject of a special synonymical study by Dr. LeConte, and the results published in Proc. Acad. 1857, pp. 6–10, with approximately correct conclusions which were confirmed or corrected by studies of the types then in the possession of Count Mniszech, in Paris (Proc. Acad. 1873, pp. 330–333).

The types of the species described by Melsheimer were obtained by the Museum of Comparative Zoology at Cambridge, and for a long time were loaned to Dr. LeConte, many of them still remaining in his cabinet, now part of that Museum.

The species described by other authors anterior to the "Revision" are few in number, and fortunately definitely known. Typical specimens of all the species described by LeConte are, with one exception, in his cabinet.

The few immediately preceding remarks indicate the authority for the names which will be used for the species in the following pages, while the work itself is based on an aggregation of material which it would be impossible at the present time to equal.

During his life-time LeConte's cabinet and my own were used in common with the result of making them similar in the names of the species and by interchange of specimens as nearly equal as possible in numbers. I have already remarked that close monographic study usually develops previously unnoticed characters, and, as will be observed in the following pages, the exact definition of several of the species became somewhat uncertain. A renewed study of many of LeConte's types became necessary, and for this possibility I must return my thanks to the Museum of Comparative Zoology for the freedom with which they have permitted me to use not only these, but also all other material in their possession. The series in the National Museum at Washington has been kindly loaned me.

Among the personal friends who have assisted me by the loan of their entire collections Mr. Ulke, of Washington, requires special mention, his series being very full and his specimens the perfection of neatness.

To Messrs. Edwards, Angell, Merkel and Reinecke, of New York, Fuller, of New Jersey, Pergande and Lugger, of Washington, Henshaw, and Blanchard of Massachusetts, Wilt and Wenzel, of this city, I am also indebted for the loan of smaller series which have been useful in their aggregation by indicating points of distribution not otherwise known. My own cabinet contains all the species with one exception.

Regarding the number of specimens examined—of thirty-three species, I have seen ten and over, in many cases hundreds, seven with five or six, five with three or four, one with two, while four only

are uniques. In the fifty species enumerated both sexes are described of forty-two, seven are known only by females, one by the male.

Having an unequaled opportunity in both the quality and quantity of material, it remains to be seen whether the results of my study, as given in the following pages, will make a really difficult subject comprehensible to others.

The genus as recognized in the following pages is in full accord with those who unite Chrysobothris and Colobogaster, the reasons for which have been aptly given by James Thomson, in "Typi Buprestidarum," App. 1, p. 40, and need not be repeated here further than to say that the size of the cavities for the articulation of the antennæ is very variable in our species. The first joint of the hind tarsi is always as long as the next three, frequently much longer.

The general form of the species is variable, but the variation is not as great as in some genera, such as Psiloptera, which are truly polymorphic. For a better idea than can be given by description the reader is referred to the annexed sketches.

In the various synoptic tables some of the characters used are common to both sexes, others are purely sexual. In the first category are those found in the surface of the thorax, the anterior margin of prosternum, the last ventral segment, and finally the clypeus.

The disc of the thorax may be regular and even, more or less equally punctured and without either grooves or irregular elevations, this is illustrated in the first six species on Plate ii and others on Plates vi–vii. The irregular disc, that is with grooves or irregular callosities and with usually uneven punctuation, is by far the most abundant form, and, in our fauna, more characteristic of the genus, see Plates iii and iv.

The anterior margin of the prosternum may be lobed or truncate, neither character being peculiar to any of the groups into which I have divided our species. The truncate prosternum occurs in *dentipes*, *trinervia* and the related species as well as elsewhere, the form is illustrated by diagram fig. 98. In those species in which the prosternum is lobed in front, the lobe varies greatly in form and size—from a simple arcuation of the middle of the front margin (fig. 99) to an abrupt, well developed projection (fig. 22).

The last ventral segment by the character of its lateral margins enables us to divide the genus into two primary series. In the first the margins are distinctly serrulate, sometimes strongly so, occasionally simply crenulate, many illustrations will be found on Plates ii to v. In the second series the lateral margins are not serrulate, as shown on Plates vi–vii, although in two species, *ærea* and *libonoti* (figs. 175–176 and 195–196), the margin is interrupted beyond the middle.

The form of the clypeus appears to have escaped observation, or at least description by nearly every author, and no one seems to have attached the importance to it which it deserves. The usual emargination of the clypeus is triangular or oval, the broader the emargination the more shallow it becomes. There are, however, several curious forms as shown in figures 12, 31, 36, 46, which are, with the exception of 36, restricted to a single species in each case. Other modifications probably occur in exotic forms and will doubtless be more accurately observed in the future.

Modifications of structure dependant on sex are very numerous, and occur in many parts of the body and its members. Descriptions are given as fully as necessary under each species and many of them illustrated on the plates, so that but little more than a few general remarks will be here given.

Form of body.—There is but little difference in the sexes except that the male is often more slender and the female more convex.

Head.—This varies in form, color, sculpture and pubescence.

Form.—The front of the male is usually much flatter, the female more convex.

Color.—Frequently the male head is green, while that of the female is æneous or cupreous.

Sculpture.—In the majority of species the front is much more densely and finely punctured and the callosities indistinct or wanting in the male, while in the female the punctures are coarser and sparser and the callosities prominent. It is rare that the callosities are more prominent in the male, while in a small number of species the front is similarly (that is, coarsely and sparsely) punctured in both sexes.

Pubescence.—In those species with a very flat front that portion is quite densely pubescent in the male and scarcely so in the female.

ANTENNÆ.—These differ in form and color.

Form.—The only instance of variation of form occurs in group viii, in which the only known male has the lower edge doubly serrate (fig. 238). In the females of this group the lower edge of the antennæ is broader than in the species of the preceding series.

Color.—The most common difference is that the male antennæ are brighter in color, green or cupreous, while in the female they are bronze or piceous. In *acutipennis* joints four to eleven of the male antennæ are more or less testaceous, in the ♀ bronze.

PROSTERNUM.—It is quite common to find the same differences in the prosternum as have been observed in the front, that is, more densely punctured and finely pubescent ♂, or more coarsely and sparsely punctured and less pubescent ♀. It is, however, not rarely that both sexes are similar and have coarse, sparse punctuation, or the prosternum may be very nearly smooth.

LEGS.—The femora show no perceptible differences in the two sexes, except that in the males they are slightly stouter. The tooth is similar.

Tibiæ.—The differences between the two sexes is usually very well marked. In the female the tibia is at most feebly arcuate without apical dilatation or tooth or serration on the inner edge. In two species, *azurea* (221) and *atrifasciata* (242), the tibiæ are so nearly alike in the sexes that the differences might readily escape observation, and in *libonoti* (197) they do not differ at all. In the males the anterior tibiæ are always more or less arcuate, and in one species *impressa* (202) angularly bent. A comparatively small number of species have the anterior tibiæ serrulate on the inner margin, and in these it will be observed that the apical dilatation is either feeble or null. Those with the tooth at a greater or less distance below the middle are even less numerous. The apical dilatation is of very variable form and size, as will be seen on the accompanying sketches. The middle tibiæ show much less variation, but in *floricola* (50) they are distinctly sinuate, in a few other species the tip is slightly thickened, while in *femorata* and *Merkelii* they are nearly as serrulate as the anterior tibiæ. In a large number the middle tibia ♂ is arcuate, but much less than the anterior, while in the ♀ it is usually straight. In but one species, *scabripennis*, the posterior tibia ♂ is arcuate.

LAST VENTRAL SEGMENT.—In all our species the last ventral segment is emarginate in the male, but variable in extent among the species, from the deep quadrangular notch of *gemmata* (180) or *acutipennis* (190) to the feeble arcuate truncation of *chrysoela* (229), *scitula*(234) or *atrifasciata* (240). It is not often that the disc is carinate in the male, and then the carina is short, and never entire, as in the female. The disc is more commonly broadly sulcate at middle as in *Merkelii* (185) or *acutipennis* (190). The last ventral of the female is rarely as deeply emarginate as in its male, *analis* (210), usually much less so and quite often truncate as in *acutipennis* (191) or *gemmata* (181), sometimes more or less sinuate as in *chrysoela* (230), *scitula* (235) or *atrifasciata* (241). The tridentate form of apex is rare, *libonoti* (196). Many modifications of the emarginate type will be observed in the sketches. The disc is often strongly carinate in the female, the carina extending from the base to the apex as in *octocola* (9), *gemmata* (181) or *Merkelii* (186). The last dorsal segment often differs in the sexes, principally in sculpture, the punctuation in the female being coarser and deeper than in the male. It will, however, be observed that in *femorata* the last dorsal of female is carinate at middle, a deep fovea on each side.

From the preceding remarks, which have been condensed as much as possible, it will be seen that modifications of a purely sexual import occur in many portions of the body, which can be utilized in more accurately defining species. The form, color and sculpture of species are often so variable that two specimens of different species will more closely resemble each other superficially than other individuals of the species to which they belong. This is especially observable in the *trinervia* series, where recourse to sexual characters is the only means of separating the closely allied members.

The species of Chrysobothris are so numerous in our fauna that they may be best understood by dividing them into groups. The primary division adopted is practically that proposed by Dr. LeConte in his Revision, with such modifications as have been rendered necessary by the increased material. It must not be supposed that these "groups" are such natural divisions that they have equal value, they are merely adopted for convenience, and those who study the species will find many points of resemblance between members of widely separated groups, e. g. *femorata* and *sexsignata*.

The following is the scheme:

Lateral margin of last ventral segment serrulate (3–171).
Disc of thorax even, without foveæ or callosities (1–25).....Group I.
Disc of thorax irregular, median line more or less sulcate, often with callosities (30–164).
Anterior tibiæ ♂ arcuate and serrulate within: clypeus acutely notched at middle, semi-circularly arcuate each side (30–34).....Group II.
Anterior tibiæ ♂ arcuate and with a tooth near the tip (35–65)....Group III.
Anterior tibiæ ♂ more or less arcuate, dilated at tip (66–172.
Form depressed (66–145).....Group IV.
Form subcylindrical, slightly pubescent (150–169).....Group V.
Lateral margin of last ventral segment not serrulate, rarely interrupted (175–246).
Elytra acuminate at tip (173–193).....Group VI.
Elytra obtuse and serrulate at tip (198–244).
Elytra with either costæ or discal foveæ, sometimes with both (198–232). Group VII.
Elytra without costæ or discal foveæ (237–244).....Group VIII.

The numbers in the table refer to the figures on the accompanying plates, the numbering being continuous for greater ease and certainty of reference. Regarding the figures on the plates it must be remembered that while many of the species are practically constant in sculpture, others are greatly variable. Every figure represents the sculpture of the specimen in hand at the time, that one being chosen which seemed most closely to represent the average sculpture.

Group I.

In this group we now have six species, two of these were so placed by Dr. LeConte, and I have added four others, three being for the first time here described, while the other had been placed in the series with the disc of thorax unequal. Five of them agree in having the thorax gradually narrowed to base, very feebly so in *purpureovittata*. In *Edwardsii*, however, the thorax is broader at base and the sides irregular. All agree in having the prosternum lobed in front, very feebly in the larger species and quite prominently in the smaller forms.

The following table will assist in separating the species:

Larger species; the elytral costæ very distinctly elevated; prosternal lobe relatively feeble; ventral segments with distinct lateral callosities.
Clypeus broadly emarginate.
Middle and posterior femora ♂ and ♀ coarsely serrate on their posterior edges.....1. **atabalipa.**
Middle and posterior femora simple.....2. **octocola.**
Clypeus semi-circularly emarginate and with a tooth each side. 3. **Edwardsii.**

Smaller species; the elytral costæ either entirely obliterated or very faintly indicated; prosternal lobe very well marked; ventral segments without lateral callosities.

Sides of thorax arcuately narrowing to base; sides of ventral segments densely punctate and rather densely clothed with fine recumbent pubescence.

Elytra with first costa faintly indicated and with indistinct discal foveæ. **4. debilis.**

Elytra without trace of costæ or foveæ; a large cupreous humeral space. **5. axillaris.**

Sides of thorax straight and almost parallel; abdomen sparsely punctate and not pubescent.

Elytra without trace of costæ or foveæ; usually blue or green, with a median purple-black vitta, surface shining ..... **6. purpureovittata.**

These species are all from the southwestern regions of our territory. The serration of the femora in *atabalipa* is a remarkable character and has not been observed in any other species in our fauna.

1. **C. atabalipa** Lap. et Gory.—Form elongate, depressed, gradually narrower posteriorly from the humeri; color above dark bronze, feebly shining, beneath more brilliant; antennæ metallic green, the margins of the joints coppery, joint three nearly as long as the next two, joints four to eleven gradually narrower; front flat, very densely punctate, occiput carinate; clypeus very broadly emarginate; thorax widest one-fourth from apex, in front of which the sides are obliquely narrowed, posteriorly nearly straight and much less oblique, hind angles distinct; disc moderately and regularly convex, without depressions, the punctuation at middle rather fine, but not close, becoming coarser, denser and more rugose at the sides; elytra a little wider than the thorax, humeri rounded, sides very gradually convergent posteriorly, the margin serrate from middle, the apices separately rounded, the sutural angle slightly spiniform; surface moderately, coarsely and densely punctate, a moderately deep fovea at middle of base, a feebler one near the humeri and three on the disc of each elytron, one in front of middle interrupting the second costa, the second behind the middle and more external, the third between the first and second costæ; the first costa is well marked and extends from the apical margin two-thirds to base, the second may or may not attain the apical margin and extends nearly to base, terminating in the humeral fovea, third costa obsolete; prosternum slightly lobed in front, the surface brilliant metallic æneous, smooth along the middle, more coarsely punctured in front and at the sides, the pleuræ densely coarsely punctured; metasternum and abdomen brilliant æneous, with coppery reflections, the punctures sparse at middle, coarser and closer at the sides, posterior margins of the segments smooth, ventral segments with their angles acute, segments two to five with a smooth tubercle at the sides, more elevated and spiniform on the last segment; last segment with the lateral margin serrate, a submarginal groove; legs punctate, æneous, with cupreous reflections. Length .56 - .86 inch; 14 - 22 mm. (Fig. 1.)

Male.—Front flat, without tubercles, finely pubescent; anterior tibiæ (5) arcuate, scarcely broader at tip, and with about four obtuse teeth on the inner edge near the tip; middle tibiæ slightly arcuate, obtusely four to five dentate within;

posterior tibiæ straight; prosternum smooth at middle, pubescent at the sides; last ventral segment (3) deeply, almost semi-circularly emarginate; last dorsal with serrate margin, slightly notched at middle.

Female.—Front slightly convex, sparsely pubescent, an arcuate ridge above each antennal fossa and a chevron at middle above; anterior tibiæ arcuate, not serrate within; middle tibiæ feebly arcuate, not serrate; posterior tibiæ straight; prosternum smooth at middle, very slightly hairy at the sides; last ventral segment (4) carinate at middle, apex sinuately truncate, with the angles slightly acute; last dorsal truncate and broadly emarginate, carinate, the edges feebly serrate.

In both sexes the anterior femora are rather obtusely toothed, the tooth serrate on its entire edge; the posterior edge of the lower side of both the middle and posterior femora is coarsely serrate in its entire extent. The first ventral segment is broadly sulcate at middle, the following segments flattened.

There seems to be very little variation in this species. Usually the first and second elytral costæ are alone distinct; in some specimens, however, there are traces of the third and fourth near the apex.

Occurs in Texas and Mexico.

2. **C. octocola** Lec.—Form moderately elongate, subdepressed, narrower at apical third; color above dark olive bronze or slightly reddish, feebly shining, beneath æneous, the median line greenish or slightly bluish; front rather flat, coarsely, densely punctured, with two chevrons in ♀ which are very indistinct or absent ♂; clypeus broadly but not deeply emarginate; thorax nearly twice as wide as long, slightly wider between the basal than the apical angles, widest one-third from apex, where the sides are angulate then straight and slightly narrowing to base; disc regularly convex without depressions or elevations, coarsely but not densely punctate at middle, very densely and rugosely at the sides; elytra wider than the thorax, parallel in front, narrowing at apical third, the median basal depression deep, with a golden spot, humeral depression feeble; three discal golden foveæ on each elytron, the first one-third from base interrupting the second costa; the second one-third from apex interrupting the third costa; the third one-fourth from apex between the first and second costæ; the first elytral costa elevated, extending three-fourths to base, the second longer, but less distinct, third short, fourth feebly indicated; surface coarsely and densely punctured except near the scutellum; lateral margin serrate in nearly its entire extent, the apices separately rounded; body beneath much more shining than above and metallic æneous or cupreous, coarsely but very sparsely punctate, each ventral segment with a smooth triangular umbone; prosternum very slightly lobed in front. Length .40 - .60 inch; 10 - 15 mm. (Fig. 6.)

Male.—Head green, chevrons usually wanting, at most but one present; antennæ metallic green, the joints four to eleven gradually narrower; anterior femora (10) stout, strongly toothed, the tooth serrate on its distal edge; anterior tibia arcuate, not broader at tip, with about five fine denticulations on the inner side; middle tibiæ slightly arcuate, the inner edge denticulate, the posterior straight; prosternum smooth at middle, coarsely punctured at the sides; last ventral (8) segment nearly semi-circularly emarginate, an intra-marginal serrate edge; last dorsal coarsely not closely punctate, a slight notch at apex.

Female.—Front æneous or cupreous, more convex, usually with two chevrons and sometimes a smooth median line in front; antennæ darker and less metallic than in the male; prosternum smooth at middle as in the male; anterior femur as in the male but less stout, the tibia less arcuate and not denticulate; middle tibia nearly straight, the posterior straight; last ventral segment (9) carinate at middle, the apex truncate, with a slight tooth at middle, the angles prominent; an intra-marginal serrate ridge; last dorsal coarsely and densely punctate, strongly carinate at middle and distinctly emarginate at apex.

In both sexes the first ventral segment is vaguely sulcate. There have been no variations of moment observed in this species. On comparison with *atabalipa* its form is less elongate, the golden foveæ more evident and the emargination of the front rounded at bottom.

Occurs in Texas, Arizona, California and in Tamaulipas, Mexico.

3. **C. Edwardsii** n. sp.—Form rather robust, moderately convex, piceous, with faint bronze lustre on the elytra, more shining on the head and thorax, beneath coppery bronze; head densely punctured; clypeus (12) deeply, semi-circularly emarginate at middle, on each side dentiform; antennæ piceous, feebly bronzed, third joint a little shorter than the next two, joints four to eleven gradually narrower; thorax more than twice as wide as long, sides feebly arcuate, sinuate at middle, obliquely narrowing at apex, and slightly arcuately narrowing at base, disc regularly convex, without callosities or depressions, coarsely punctate, rather sparsely at middle, more densely and transversely wrinkled at the sides; elytra very little wider than the thorax, very little more than twice as long as wide, arcuately narrowing at apical third, the lateral margin serrate; the sutural margin elevated two-thirds to base, the first costa sharply elevated three-fourths to base, the second nearly as long, the third less distinct, the fourth very distinct in its apical half; the basal fovea deep, the humeral depression distinct, the discal foveæ existing in a faint trace, the inner about one-fourth from the apex between the first and second costæ, the second more anterior, interrupting the third costa; intervals between the costæ moderately, densely and very regularly punctate; body beneath coarsely and moderately densely punctured, the ventral segments one to five with a smooth umbone at the sides. Length .45 inch; 11.5 mm. (Fig. 11.)

Male.—Unknown.

Female.—Front cupreous, convex, with two chevrons in the form of an inverted V; prosternum broadly smooth at middle, coarsely punctured at the sides; anterior tibiæ slightly arcuate, the middle and posterior straight; last ventral segment (13) nearly semi-circular, with a very feeble notch at tip, the margin serrate; a distinct submarginal line, within which is a feebly serrate elevation.

The prosternum is very distinctly lobed in front and the tooth of the anterior femur is serrate along its entire outer edge from the apex.

At first glance this species resembles some of the more robust forms of *femorata*. It is, however, easily known from any other species in our fauna by the form of the clypeus which seems peculiar.

Occurs at Tucson, Arizona; Henry Edwards.

4. **C. debilis** Lec.—Form moderately elongate, slightly convex, dark brownish bronze, sometimes slightly æneous, sides of thorax usually broadly, bright cupreous; antennæ bright cupreous ♂ or piceous ♀, gradually more slender to the tip, the third joint as long as the next two; front slightly convex, densely punctate, more finely and more distinctly pubescent in the male, two distinct callosities, the occipital carina sometimes bifurcate on the vertex; clypeus with a moderately deep oval emargination at middle arcuate each side; thorax one and a half times as wide as long, the base slightly narrower than the apex, the sides arcuate, broadest at apical third, disc moderately convex, surface regular, without median or other grooves or callosities, the punctuation a little variable, usually not dense, sometimes indistinct, but with distinct transverse strigæ; elytra a little wider than the thorax, parallel, narrowed at apical third, the margins serrulate, the apices obtuse; first costa elevated near the apex, the others indicated by smooth lines, more or less distinct, and usually interrupted; basal fovea distinct but not deep, two foveæ at apical third sometimes confluent, another in front of middle on the second costal line, surface moderately closely punctured, more densely near the base; body beneath dark bronze, rather densely punctured, the sides of the ventral segments densely and finely punctured and rather densely clothed with white pubescence, the middle of the segments more coarsely and sparsely punctured, a narrow space on each side of sutures two, three and four smooth and shining; prosternum with a well defined lobe in front; anterior femur with a moderately large, serrate tooth; margin of last ventral segment serrulate. Length .20-.32 inch: 5-8 mm. (Fig. 15.)

Male.—Prosternum flat, densely, finely punctured and pubescent; anterior tibia (19) arcuate and with a short dilatation at apex; middle and posterior tibiæ straight: last ventral segment (17) semi-circularly emarginate; last dorsal coarsely punctate, triangularly emarginate at apex.

Female.—Prosternum flat, more coarsely punctured and less pubescent than the male; anterior tibia slightly arcuate, the middle and posterior straight; last ventral (18) truncate, slightly emarginate; last dorsal coarsely punctate, entire.

While this species is rather inconspicuous in appearance it is as easy to recognize as any in our fauna by the very well defined prosternal lobe, the densely finely punctured sides of the abdomen with the white pubescence and the elytral sculpture. I have examined the types of *debilis* and *disjuncta* and find no appreciable difference. They were originally described from uniques, but I have recently examined more than twenty specimens. The elytral foveæ are often conspicuously cupreous; in the majority of specimens not so.

Occurs in Ohio (LeConte), Texas, Arizona and southern California.

5. **C. axillaris** n. sp.—Form moderately elongate, not very convex, nearly as in *debilis*, but broader; color dark brownish bronze, the basal fovea of the elytra and large humeral space, bright coppery red; antennæ more slender to the tip, piceous, second joint as long as the next two; front very slightly convex, coarsely, closely punctate, two small tuberosities and a feeble chevron above; clypeus with a moderately deep oval emargination, arcuate each side; thorax twice as wide as long, base and apex equal, sides slightly irregularly arcuate, disc moderately convex, without depressions or callosities, the surface rather sparsely

punctured at middle; more densely at the sides; elytra wider than the thorax, parallel, arcuately narrowed at apical third, the margins serrate, the apices obtuse, disc moderately convex, basal fovea distinct and bright cupreous, the first costa faintly indicated behind the middle by a smooth line, the surface densely punctured, more sparsely toward the suture and posteriorly; body beneath nearly black, densely punctured, the ventral segments very densely punctulate at the sides and clothed with fine white pubescence, at middle much more coarsely punctured, the basal margins of the last three segments smooth, the terminal segment with the margins serrulate; prosternum very distinctly lobed in front; anterior femur with a moderately large tooth, serrate in its distal edge. Length .31 inch; 8 mm. (Fig. 20.)

Male.—Unknown.

Female.—Prosternum flat, densely and coarsely, almost cribrately punctured; anterior tibia (24) slightly arcuate, the middle and posterior straight; last ventral segment (23) with a very small, semi-circular notch at tip.

This species is closely allied by its prosternal lobe and the punctuation of the abdomen to *debilis*, but differs from that species in the almost total absence of elytral sculpture excepting the punctuation. The ventral punctuation is also different, as the densely punctured lateral region extends more to the middle and the median region is more coarsely and closely punctate. The anterior tibiæ are bright coppery red, while the large humeral space is quite conspicuous.

One specimen, southern Arizona; two from Texas a little more brilliantly colored.

6. **C. purpureovittata** n. sp.—Form moderately elongate, feebly depressed, color bright blue or green, varying to violet or coppery bronze, each elytron with a moderately broad purple-black vitta extending from the humeri nearly to the tip, indistinct on the violet or bronze species, surface rather shining; antennæ cupreous, gradually more slender to the tip, the third joint very little longer than the fourth; front slightly convex, moderately densely punctured, a slight arcuate carina near the top, clypeus rather broadly triangularly emarginate, the notch oval at bottom, on each side arcuate, thorax about one and a half times as wide as long, the sides straight and very slightly convergent to base, anterior angles slightly rounded, disc moderately convex, surface regular without inequalities, punctuation rather sparse at middle, denser and very slightly strigose near the sides; elytra a little wider than the thorax, parallel, very slightly wider behind the middle, apical third rather obliquely narrowed, the margin relatively coarsely serrate, the apices obtuse; surface equal, without costæ or foveæ, except the usual basal fovea and a moderate intra-humeral depression, surface rather finely not closely, but quite evenly punctate; body beneath similar in color to the upper surface, rather sparsely punctate, the ventral segments without callosities, the margin of the last distinctly serrulate; prosternum very distinctly lobed in front; anterior femur with a small, very acute tooth and a few denticulations more externally. Length .22 - .29 inch; 5.5 - 7.5 mm. (Fig. 25.)

Male. - Prosternum slightly convex, a little more coarsely and closely punctured than the elytra; anterior tibia (29) slightly arcuate, a short and rather narrow

dilatation at apex; middle and posterior tibiæ straight; last ventral segment (27) semi-circularly emarginate; last dorsal coarsely, sparsely punctate, slightly notched at middle.

Female.—Prosternum as in the male; anterior tibia very slightly arcuate, the others straight; last ventral (28) sinuately truncate; last dorsal coarsely punctate, the apex entire.

In the bright blue or green specimens the extreme margin of the thorax as well as the entire lateral margin of the body beneath and the femora are bright cupreous. The brightly colored specimens with the more distinct blackish vitta are very pretty and easily known, the darker forms by their color and form resemble *scitula* at first glance.

Occurs in Indiana, Illinois, Kansas and Texas, the latter region being most numerously represented.

Group II.

The group here separated is characterized by having the disc of the thorax irregular, more or less sulcate at middle, the last ventral segment with serrulate margin. The clypeus is acutely incised at middle, semi-circular each side and it may be aptly compared to two semi-circles tangent with their diameters continuous. The anterior tibiæ of the male are arcuate, the inner edge multi-denticulate and the middle tibiæ are similar. The form of the two pairs of tibiæ is repeated in *sexsignata* which has also a similar clypeus, but more broadly emarginate, but the last ventral segment has the lateral margin entire.

There is but one species known which can be referred to this group, but what the group lacks in number is made up in the variation of that one species and is without parallel in our series.

7. **C. femorata** Fab.—Form oblong, sometimes slightly robust or moderately elongate, usually of dark bronze surface, but sometimes slightly brassy, cupreous, or rarely æneous; antennæ serrate from the fourth joint and gradually more slender to the tip, the third joint a little longer than the next two; greenish ♂ or cupreous ♀; front rather flat ♂ or slightly convex ♀ and with a chevron in both sexes and other callosities ♀; clypeus (31) at middle acutely notched, on each side semi-circular; thorax more than twice as wide as long, widest slightly behind the apex, the sides somewhat irregular, slightly narrowed at base; disc irregular, an indistinct median depression, a deeper depression posterior to and parallel with the apical margin, with other irregular depressions near the side; surface rather coarsely punctured less densely at middle, more densely and deeply at the sides; elytra a little wider than the thorax, sides nearly parallel, gradually narrowed at apical third, the margin serrate, the apices obtuse; disc feebly convex, the sculpture very variable, usually with the first

and second costæ distinct near the apex, and with two foveæ on each side, which are transverse in form, the first a little in front of middle, the second one-third from apex, the basal depression rather feeble, the surface otherwise coarsely and near the sides confluently punctured; body beneath more shining than above and more metallic, usually more or less greenish in the ♂ or cupreous ♀, the surface coarsely but not densely punctured, the ventral segments with a triangular umbone on each side; prosternum not lobed in front, the surface coarsely punctured at the sides and with a smooth broad line at middle, hairy in the ♂; anterior femur with a rather broad, obtuse tooth, the entire margin of which is serrate. Length .28 - .64 inch; 7 - 16 mm. (Fig. 30.)

Male.—Front usually green, hairy; anterior tibiæ (34) arcuate, slightly dilated at tip, the inner margin with small teeth, usually five, sometimes more, rarely serrulate; middle tibiæ arcuate, the inner margin serrulate, except near the base; posterior tibiæ straight; last ventral segment (32) with the margin serrulate, a submarginal depression, the apex semi-circularly emarginate; last dorsal segment coarsely, sparsely punctate, the apical border emarginate.

Female.—Front cupreous, never green, not hairy; anterior tibiæ arcuate, slightly broader at tip, not serrate or toothed internally; middle tibiæ slightly arcuate, inner margin simple; posterior tibiæ straight; last ventral segment (33) more elongate than in the male, the apex broadly but feebly emarginate, the angles sometimes slightly prominent; last dorsal strongly carinate at middle, the apex truncate.

As might be expected with a species of such wide distribution the variations in aspect and in sculpture are very great, but with a large series the specific identity of all the forms is easily demonstrable. The essential characters of the species remain the same through all its variations and may be summarized as follows; last ventral segment with serrulate margin; thorax with irregular surface; clypeus acutely notched at middle and semi-circular each side; anterior tibiæ of male slightly dilated at tip, the inner side denticulate.

The form of the clypeus is peculiar to the species, the only approach to a similarity being in *sexsignata*, which has the margin of the last ventral simple. The variations of sculpture have given rise to the descriptions of many of the forms under different specific names, the most important of which will be briefly noted.

C. Alabamæ Gory.—This is the larger and more robust form occurring in the Gulf States. The sculpture is quite coarse, but the elytral costæ are hardly indicated. The foveæ of the disc are well marked and usually coppery.

C. femorata Fab.—Is the form more common in the Middle States, and in size it is somewhat smaller and less robust than *Alabamæ*, the sculpture smoother, the elytral costæ a little more evident, and the foveæ more sharply limited.

C. soror Lec.—This is a little smoother and more slender, the thorax more decidedly narrowed at base, the elytral costæ without being much elevated are more distinct for a greater length.

C. Lesueuri Lap. et Gory.—In this form, which resembles *soror* in shape, the elytral sculpture is quite sharply indicated and the costæ, foveæ and more densely punctured intervals are well limited. The foveæ are especially sharply defined and are usually more golden in color.

C. nigritula Lap. et Gory. (*obscura* Lec.)—Form slender, rather more acutely narrowed posteriorly, the surface more greenish from the color of the punctures and the sculpture even more confused than in *Alabamæ.*

C. misella Lec.—This form is founded on small and imperfectly developed specimens and from their sculpture and general appearance should be referred to the variety *femorata.*

Other variations will be observed in the color of the under side of the body from brassy to cupreous and green, but as these are so common everywhere in the Buprestidæ it is merely necessary to indicate their occurrence.

As already remarked the species has a very wide distribution. It occurs in Canada and in every State and territory in the United States and extends into Mexico.

Group III.

The group here suggested consists of species of at most moderate size, without very conspicuous or well defined elytral sculpture. The thorax has a rather feeble median impression, almost wanting in *ignicollis* and *contigua*, being therefore intermediate between the species of the first group and those aggregated around *trinervia.* The last ventral segment has a serrate margin. The essential character of the group is found in the anterior tibia of the male, which has an acute tooth (in *contigua* obtuse) usually one-third from the apex, although in *speculifer* and *viridicyanea* it is very close to the apex.

The following table gives, in brief, the characters separating the species:

Clypeus acutely incised at middle, dentate each side.

Clypeal teeth well marked; tooth of anterior tibia ♂ rather broad, not very acute at tip.....8. **contigua.**

Clypeal teeth scarcely prominent; tooth of anterior tibia male acute and prominent.....9. **cuprascens.**

Clypeus with a truncate median lobe, a slight sinuation on each side; anterior tibia ♂ as in *cuprascens*.....10. **floricola.**

Clypeus with an oval or broad emargination at middle.

Color coppery bronze, or some slight variation of that.

Tooth of anterior tibia ♂ slender, acute and one-third from the apex. 11. **ignicollis.**

Tooth of anterior tibia ♂ triangular, very near the tip..12. **speculifer.**

Color bright blue or greenish; tooth of anterior tibia ♂ rather large, triangular and acute, very near the apex.....13. **viridicyanea.**

The species of this group, with the exception of *floricola*, belong to the region of Colorado and Texas, westward to California and Oregon. The first mentioned (*floricola*) belongs to the Atlantic region proper.

8. **C. contigua** Lec.—Moderately elongate, subdepressed; color above dark bronze, moderately shining; thorax somewhat cupreous, beneath usually cupreous; antennæ gradually more slender to tip, with greenish ♂ or cupreous ♀ lustre, third joint as long as the next two; front flat and densely punctured, greenish and pubescent ♂ or slightly convex, less densely punctured, cupreous and not pubescent ♀; clypeus (36) with a small acute notch at middle, on each side a small acute tooth and sinuate; thorax twice as wide as long, base and apex equal, sides obliquely narrowed at apex, nearly parallel at middle, then slightly narrowed at base; disc rather uneven, median depression feeble, with a distinct impressed line posteriorly, post apical transverse impression distinct; surface coarsely and not densely punctured at middle, more densely, almost cribrately punctured at the sides; elytra wider than the thorax, parallel, narrower at apical third, the margin serrulate, the apices obtuse; surface irregularly sculptured, the first costa distinct at apical half, the others confused, intervals coarsely, densely punctured, with an irregular smoother space behind the middle, a second near the apex, basal and humeral depressions distinct; prosternum distinctly but feebly lobed in front; body beneath shining, coarsely not densely punctured; anterior femur with a small tooth, not visibly, serrate. Length .28 - .42 inch; 7 - 10.5 mm. (Fig. 35.)

Male.—Prosternum very densely punctured, sparsely pubescent; anterior tibiæ (39) slightly arcuate, a little thicker at tip and with a broad, rather obtuse tooth below the middle; middle and posterior tibiæ straight; last ventral segment (37) with serrulate margin, the apex with a small semi-circular emargination; last dorsal sparsely punctate, apex emarginate.

Female.—Prosternum coarsely not densely punctate; anterior tibiæ slightly arcuate not dilated nor toothed; middle and posterior straight; last ventral segment (38) with serrulate margin, and with a very small emargination at tip; last dorsal very coarsely punctate and entire.

This species shows very little variation in the color of its surface, but the sculpture is slightly variable and difficult to describe without being individual. In appearance it resembles some of the forms of *femorata*. With this species begins a small series in which the male has the anterior tibia toothed at some point below the middle, of

these two only have the form of clypeus described above; the present species has the tibial tooth slightly below the middle and obtuse, while in *cuprascens* it is one-third from the apex and acute.

Occurs in Oregon, Washington Territory, Nevada and California.

9. **C. cuprascens** Lec.—Form of *femorata*, subdepressed, cupreo-æneous, the thorax more reddish, moderately shining; antennæ more slender at tip, greenish ♂ or æneous ♀, third joint as long as the next two; front feebly convex, without callosities, more densely punctured and greenish ♂; clypeus (41) triangularly notched at middle, on each side acutely toothed, then subtruncate; thorax twice as wide as long, base and apex equal, sides in front narrowing, at middle parallel, slightly sinuate, base slightly narrowed; disc irregular, a vague median depression and with slight depressions near the side; surface coarsely and moderately closely punctate, subconfluent near the sides; elytra wider than the thorax, the sides parallel, or slightly sinuous, narrowing at apical third, the margin serrulate, the apices obtuse; the first costa distinctly elevated, extending two-thirds to base, the second and third costæ feebly evident at middle; basal fovea moderately deep, discal foveæ two on each side, the first irregularly quadrate near the middle between the first and third costæ, the second one-third from the apex transverse, the foveæ very densely and finely punctured, the surface otherwise irregularly punctured, densely and coarsely punctured at sides and apex, more sparsely on the disc; body beneath coarsely not densely punctate; last ventral segment serrulate; anterior femur with a small tooth not serrulate. Length .26 - 36 inch; 6.5 - 9 mm. (Fig. 40.)

Male.—Prosternum very densely punctured, finely pubescent; anterior tibiæ (44) slightly arcuate, acutely toothed one-third from the apex; middle and posterior tibiæ straight; last ventral segment (42) with a small, semi-circular emargination; last dorsal obsoletely punctate, apex subtruncate.

Female.—Prosternum coarsely and closely punctate; anterior tibiæ slightly arcuate, simple, the middle and posterior straight; last ventral (43) with a very small emargination at apex; last dorsal sparsely punctate at the sides, the apex entire.

With a form of clypeus similar to that of *contigua* this species differs in the form and position of the anterior tibial tooth of the male. The sculpture of the surface is more distinctly defined and the shallow foveæ quite well indicated. There seems to be very little variation in the numerous specimens examined.

The unique type in the cabinet of Dr. LeConte has the clypeus without the two median teeth as I have indicated in a previous paper (Trans. Am. Ent. Soc. pl. iv, fig. 16); this seems, however, purely accidental, as my specimens otherwise agree so closely in form, color, sculpture and sexual characters.

Occurs in Colorado and New Mexico.

10. **C. floricola** Gory.—Form of *femorata*, subdepressed, dark bronze, with slight cupreous tinge; antennæ very little more slender toward the tip, æneous ♀ or greenish ♂, third joint a little longer than the next two; front slightly

convex in both sexes, coarsely, densely punctured, with small, irregular callosities; clypeus (46) with a short, median, truncate lobe, on each side of which is a slight sinuation; thorax more than twice as wide as long, the sides nearly parallel at middle, narrowed at apex and base; disc irregular, a distinct median channel, wider in ♀, and some irregular depressions near the side, a subcariniform callus at base opposite the middle of each elytron; surface coarsely punctate, not densely at middle, very densely and confluent at the sides; elytra wider than the thorax, often wider slightly behind the middle, gradually narrowed at apical third, the margin serrulate, the apices obtusely rounded; the first costa moderately elevated from the apex to the middle, the other costa very indistinctly defined and irregular, the basal and humeral depressions not deep, surface very densely punctured between the slight elevations, more sparsely near the base; body beneath sparsely punctate, very shining; prosternum distinctly lobed in front; last ventral segment with serrulate margin; anterior femur with rather strong tooth, serrulate on its distal edge. Length .34 - .48 inch; 8.5 - 12 mm. (Fig. 45.)

Male.—Prosternum coarsely, sparsely punctate at the sides, scarcely hairy; anterior tibia (50) slightly arcuate, with a very acute and prominent tooth one-third from the tip; middle tibia slightly arcuate, the inner side slightly sinuous and subangulate one-third from the apex; posterior tibia straight; last ventral segment (47) with a very feeble emargination at apex; last dorsal coarsely punctate, the apical margin subtruncate.

Female.—Prosternum as in the male; anterior tibia feebly arcuate, inner margin simple; middle and posterior tibiæ straight; last ventral segment (48) longer than in the male, subtruncate at apex; last dorsal very coarsely punctate, apex entire.

While there is very little noteworthy in the general appearance of this species, it is unique in the form of the clypeus being the only one in our fauna without emargination. The form of the middle tibia of the male is also unique.

Occurs from the Middle States to Florida.

11. **C. ignicollis** Horn.—Form nearly that of the smaller *femorata*, but rather broader, color dark bronze, the head and thorax bright cupreous; antennæ rather short, æneous ♂, piceous ♀, serrate from the fourth joint but scarcely narrower externally, third joint as long as the next two; front slightly convex, more densely punctured in the male; clypeus (52) with a rather shallow, broad emargination at middle; thorax twice as wide as long, sides at middle parallel and slightly sinuate, narrowed at apex and base; disc feebly convex, a vague median depression with others irregular near the sides and apex; surface moderately coarsely punctured, the punctures sparse and rather irregular at middle, dense and confluent at the sides; elytra a little wider than the thorax, parallel, narrowed at apical third, the margin serrulate, the apices obtuse; disc feebly convex, the first costa extending from apex to middle, the discal foveæ shallow, transverse, densely punctured, the basal fovea deep, the surface between the discal foveæ and posterior to the last very sparsely punctured, the surface otherwise coarsely and densely punctured; body beneath bright æneous or subcupreous, coarsely, sparsely punctured, rather more densely at the sides of the ventral segments; last ventral segment with serrulate margin; anterior femur with rather small, obtuse tooth, serrate along its distal margin. Length .24 - .32 inch; 6 - 8 mm. (Fig. 51.)

Male.—Prosternum not lobed in front, coarsely, densely punctured, with a feeble trace of smooth median space, sparsely pubescent; anterior tibia (55) slightly arcuate, and with a very acute tooth one-third from the tip; middle tibia slightly sinuate on the inner side; last ventral segment (53) broadly, almost semi-circularly emarginate; last dorsal sparsely punctured.

Female.—Prosternum coarsely, sparsely punctured, the median smooth space evident; anterior tibia slightly arcuate, middle and posterior straight; last ventral segment (54) with a very small emargination at apex; last dorsal very coarsely densely punctured.

The general style of elytral sculpture is that of *contigua*, *cupriscens* and *speculifer*, and in aspect it resembles especially the second. The form of the clypeus will distinguish it from the first two while the form and position of the anterior tibial tooth of male will separate it from the third. It is almost impossible, in description, to separate the females of *speculifer* and *ignicollis*.

Occurs in Colorado and Texas.

12. **C. speculifer** n. sp.—Form oblong, subdepressed, as in the var. *misella* of *femorata*, bright cupreo-æneous, usually more red posteriorly; antennæ piceous, slightly æneous, more slender externally, the third joint as long as the next two; front slightly convex in both sexes, coarsely and closely punctured, with callosities sometimes forming two chevrons; clypeus (57) very broadly but not deeply triangularly emarginate on each side rounded, usually with a submarginal elevated line parallel with the emargination; thorax rather more than twice as wide as long, sides at middle slightly sinuate, narrowed at apex and base; disc moderately convex, at middle a slight depression with distinctly impressed line, near the side irregular depressions and opposite the middle of base of each elytron a feeble cariniform callus; surface densely punctate at middle, then more sparsely punctate, confluent near the sides; elytra a little wider than the thorax, parallel, narrowed at apical third, the margin posteriorly feebly serrate, the apices separately rounded; disc subdepressed, the first costa distinctly elevated from apex to middle, two more densely punctured discal foveæ of large and irregular form, the one at apical third the other in front of middle, the basal fovea deep, and with elevated spaces conspicuously shining and smooth, the surface otherwise rather densely and coarsely punctured; body beneath very coarsely not closely punctate, the ventral segments with distinct callosities at the sides; prosternum not lobed in front, coarsely, closely punctate in both sexes with feeble, smooth, median line; anterior femur with moderate tooth serrate on its distal margin. Length .24 - .28 inch; 6 - 7 mm. (Fig. 56.)

Male.—Anterior tibia (60) feebly arcuate, slightly broadened at tip and with an acute tooth near the apex; middle tibia slightly arcuate, the posterior straight; last ventral segment (58) semi-circularly emarginate.

Female.—Anterior tibia slightly arcuate, without notch; the middle and posterior straight; last ventral (59) with a very small emargination at tip.

With a similarity of surface sculpture to the other members of the group with toothed anterior tibia, this species is notable in having

the smooth spaces more sharply limited and more shining. The especial distinction is, however, based on the form of clypeus and the male sexual characters.

Occurs in Colorado and Arizona.

13. **C. viridicyanea** n. sp.—Form oblong, subdepressed, bright cobalt blue changing to green; antennæ green, more slender externally, third joint as long as the next two; front feebly convex, rather densely punctured and with two feeble callosities; clypeus (62) with a feeble, triangular emargination at middle on each side arcuate; thorax more than twice as wide as long, nearly parallel at middle, narrowed at apex and base; disc feebly convex, a vague, median, and some irregular lateral depressions; surface coarsely punctate, sparsely at middle, more densely and subconfluently at the sides; elytra broader than the thorax, a little wider behind the middle, arcuately narrowing at apical third, margin feebly serrate posteriorly, the apices separately obtuse; the first costa distinctly elevated from apex to middle, the basal fovea deep, the surface rather coarsely and densely punctured, very irregularly in places with transverse smoother spaces at apical third, behind the middle and obliquely from the humeri; body beneath more shining than above, coarsely but sparsely punctate; prosternum not lobed; last ventral with serrulate margin; anterior tibia with feeble tooth, serrate on its distal edge. Length .32 - .36 inch: 8 - 9 mm. (Fig. 61.)

Male.—Prosternum very densely punctured and pubescent; anterior tibia (65) slightly arcuate, a slight dilatation one-third from base, a strong acute tooth near the apex; middle tibia slightly sinuous within, the posterior straight; last ventral segment (63) deeply semi-circularly emarginate, the last dorsal coarsely punctate and feebly emarginate at apex.

Female.—Prosternum coarsely, moderately, closely punctate; anterior tibia feebly arcuate; middle and posterior straight; last ventral (64) longer than in the male, feebly but rather broadly emarginate; last dorsal closely punctate, subtruncate.

This species has a general superficial resemblance to *Harrisii*, but is more densely punctate and less shining. The two species differ primarily in their sexual characters.

Occurs in California, Nevada and Montana.

Group IV.

This group contains nearly one-third of all the species in our fauna, and is of very difficult study, and from the similarity of the elytral sculpture in seven of the species it is necessary to have recourse to sexual characters. The species divide themselves into two equal series—those with the prosternum lobed in front and those with the prosternum truncate. The lobe is here never so well marked as has been observed in several other groups, and in fact in several species consists of a mere arcuation of the anterior margin of the prosternum.

The following table will assist in the determination of the species:

Prosternum without trace of lobe in front.....2.
Prosternum lobed, sometimes rather feebly.....8.
2.—Color bright blue; thorax with a feeble trace of a median sulcus.
14. **Harrisii.**
Color dark bronze or æneous.....3.
3.—Disc of thorax not sulcate at middle, but with an arcuate impression on either side.....15. **dolata.**
Disc of thorax sulcate at middle.....4.
4.—Joints four to eleven of antennæ more or less testaceous.....16. **dentipes.**
Antennæ uniform, usually entirely metallic.....5.
5.—Joints four to eleven of antennæ equally broad in both sexes.
17. **ludificata.**
Antennæ gradually more slender to tip.....6.
6.—Posterior tibiæ of ♂ arcuate.....18. **scabripennis.**
Posterior tibiæ in both sexes straight.....7.
7.—Anterior tibiæ ♂ abruptly dilated at tip for a short distance without sinuation above the dilatation; last ventral ♀ with a narrow but moderately deep notch.....19. **trinervia.**
Anterior tibiæ ♂ dilated at tip, sinuate above the dilatation; last ventral of ♀ with an extremely feeble truncation, almost entire.
20. **carinipennis.**
Anterior tibiæ ♂ abruptly dilated at tip, deeply sinuate above the dilatation; last ventral ♀ distinctly emarginate, with a well marked transverse ridge in front of the notch.....21. **caurina.**
8.—Median sulcus of thorax very well marked, the elevated smoother spaces conspicuous.....9.
Median sulcus very feeble, linear or almost obliterated, the sides of the disc without obvious smoother or elevated spaces.....12.
9.—Anterior tibia ♂ with an abrupt dilatation at tip.....10.
Anterior tibia merely a little broader at tip.....11.
10.—Elytral costæ interrupted, but not expanded near the base; form oblong.
The first elytral costa very nearly parallel with the suture and elevated nearly to the base; last ventral without distinct submarginal serrate ridge.....22. **californica.**
First elytral costa sinuous, especially near the apex, evanescent in front of middle; last ventral with submarginal serrate ridge.
23. **Blanchardi.**
Elytral costæ interrupted, and near the base expanded in broad smooth spaces, more or less confluent; form broad, depressed.
24. **quadrilineata.**
11.—Callosities of ventral segments pronounced; elytral sculpture of rather sharply defined, depressed, punctured spaces and narrow, well elevated, smooth ridges.....25. **excisa.**
12.—Last ventral segment with a distinct, submarginal, feebly serrate ridge, the marginal groove consequently deep.....26. **texana.**
Last ventral without submarginal ridge, the marginal groove feeble.....13.

13.—Anterior tibia ♂ dilated near the tip, without obvious sinuation.

Tooth of anterior femur serrulate; ventral segments with distinct lateral smooth spaces; last ventral ♀ with small, semi-circular emargination. 27. **mali.**

Tooth of anterior femur not or extremely indistinctly serrulate; ventral segments without lateral smooth spaces; last ventral ♀ with a barely perceptible emargination..... 28. **pusilla.**

Anterior tibia ♂ abruptly dilated at apex, deeply sinuate above the dilatation; femoral tooth serrulate; ventral segments without lateral smooth spaces; last ventral ♀ emarginate at tip, with a transverse ridge in front of emargination..... 29. **mixa.**

This group has representation in every part of our fauna and two of the species, *dentipes* and *trinervia*, have very wide distribution, the other species are more restricted in their habitats.

14. **C. Harrisii** Hentz.—Form rather broad, subdepressed; color blue, or greenish blue, shining, beneath similar in color, but usually darker; antennæ piceous, slightly more slender to tip, third joint not as long as the next two, sometimes hardly longer than the fourth; front slightly convex, a little more punctate in the male and somewhat more green; clypeus (67) with a broad, shallow emargination at middle, arcuate each side; thorax a little more than twice as wide as long, obliquely narrowed at apex and base, slightly sinuate at middle, disc moderately convex, a vague depression of the median line; surface somewhat irregular, coarsely and closely punctured, transversely strigose near the sides; elytra wider than the thorax, slightly wider behind the middle, disc feebly convex, the first and fourth costæ slightly elevated near the apex, basal depression deep, the humeral slight, a large shallow fovea one-third from base on the line of the second costa, frequently another less distinct one-third from apex, surface rather coarsely and roughly punctured; body beneath moderately coarsely, but not densely punctured, the ventral segments without lateral callosities, the posterior angles not prominent, the last ventral with serrulate margin; anterior femur with a moderate and rather obtuse tooth, feebly serrate; prosternum not lobed in front. Length .24 - .32 inch; 6 - 8 mm. (Fig. 66.)

Male.—Prosternum flat, densely punctured; anterior tibiæ (70) arcuate, slightly dilated at apex, sinuate above the dilatation; middle tibia arcuate, very obliquely grooved, posterior tibia straight; last ventral segment (68) semi-circularly emarginate; last dorsal coarsely punctate, triangularly notched at apex.

Female.—Prosternum very coarsely punctate; anterior tibia slightly arcuate, the middle less so, the posterior straight; last dorsal (69) longer than in the male, a very slight notch at tip; last dorsal coarsely punctured, the apex entire.

This species has heretofore been placed among those in which the last ventral segment has an entire border, but in all the specimens examined it is distinctly serrulate, its place is therefore in the present series. The only species at all closely resembling it is *viridicyanea*, which has other sexual characters.

New England States and Canada, extending as far south as North Carolina.

15. **C. dolata** n. sp.—Form rather broad, as depressed as in *dentipes*, color piceous or nearly black, with faint bronze lustre, beneath cupreous; antennæ cupreous, gradually more slender to the tip, the third joint a little longer than the next two; front (♀) cupreous, coarsely and closely punctate, with two callosities at middle; clypeus (72) with a triangularly oval emargination at middle on each side arcuate; thorax twice as wide as long, sides strongly arcuate near the front angles then feebly arcuately narrowing to base; disc feebly convex not sulcate at middle, a moderately deep crescentic depression each side, an oblique depression near the apex, a feebly elevated ridge near the sides, surface very densely, rather coarsely punctate, the punctures slightly transversely confluent; elytra wider than the thorax, rapidly narrowed at apical third, the margin serrulate, the apices obtuse; disc with the first costa entire, the second and third interrupted and transversely confluent into large, smooth, elevated spaces, the fourth costa fine and submarginal, the intervals very densely punctured and opaque; body beneath cupreous, moderately closely punctate; prosternum not lobed in front, coarsely and closely punctate ♀; last ventral segment with serrulate margin; anterior femur with moderately strong, serrulate tooth. Length .46 inch; 11.5 mm. (Fig. 71.)

Male.—Unknown.

Female.—Anterior and middle tibiæ feebly arcuate, the posterior straight; last ventral segment (73) very feebly emarginate at apex; last dorsal sparsely punctate, acutely notched at apex.

Not having the male of this species its position in a tabular arrangement is somewhat uncertain, but the absence of prosternal lobe restricts its position between those in which the male have a tibial tooth or those with an apical dilatation. The form of the thorax, the emargination of the clypeus and the peculiar elytral sculpture will make it recognizable. The contrast on the elytra between the elevated smooth spaces and the densely punctured intervals is very striking.

Occurs in California, Nevada and Oregon, and is thus far rare.

16. **C. dentipes** Germ.—Form moderately elongate, depressed, color dark bronze, either brownish or piceous, very feebly shining; antennæ more slender externally, joint three nearly as long as the next two, joints four to eleven in great part testaceous; front flat and densely punctured, without distinct callosities ♂, or slightly convex, irregularly, coarsely punctured, with more or less distinct callosities ♀; clypeus (76) rather broadly, triangularly notched at middle, on each side rounded; thorax nearly twice as wide as long, broadest one-third from apex, the sides posteriorly slightly sinuate and gradually narrowed to base; disc moderately convex, a broad median sulcus wider in front, limited on either side by a more elevated smoother space, between which and the margin the surface is irregular; surface densely punctate and at sides confluent; elytra wider than the thorax, nearly parallel, obliquely narrowed at apical third, the margin feebly serrate, the apices separately obtuse; disc rather flat, the first costa distinct at apical half terminating in front in a vague, smooth space, the other costæ replaced by broad smoother spaces of irregular shape, the surface between very densely punctured, the basal fovea moderate; body beneath cupreous,

coarsely not closely punctate; prosternum (98) not lobed in front; anterior femur with a rather strong but obtuse tooth, serrate on its distal edge; last ventral segment with serrulate border. Length .40 - .64 inch; 10 - 16 mm. (Fig. 75.)

Male.—Prosternum very sparsely punctate, more densely and finely along the anterior border; anterior (79) and middle tibiæ arcuate and slightly dilated near the apex, the posterior very feebly arcuate; last ventral segment (77) broadly, nearly semi-circularly emarginate: last dorsal coarsely not densely punctate, emarginate at apex.

Female.—Prosternum as in the *male:* anterior and middle tibiæ feebly arcuate, the posterior straight; last ventral (78) longer than in the male, a feeble emargination at apex; last dorsal coarsely punctate at apex and with a small emargination.

Notwithstanding the wide distribution of this species it shows so very little variation except in size and surface color, that there will be no trouble in recognizing it. It is remarkable in having the outer joints of the antennæ yellowish testaceous in both sexes, a similar structure will be observed in the male of *prolongata.* The anterior and middle tibiæ of the male are almost exactly alike, a condition very unusual in the genus. Superficially the sculpture is somewhat like *floricola.*

Occurs in Canada and all the States east of the Mississippi and from Missouri westward to Nevada and Oregon. I have never had specimens from Texas, Arizona, New Mexico or California.

17. **C. ludificata** n. sp.—Form moderately elongate, very little convex, piceous or nearly black with the densely punctured spaces cupreous, body beneath dark bronze; antennæ (96) bronze, joints four to eleven serrate and equally broad, third as long as the next two; front very slightly convex, coarsely punctate, with more elevated tubercles; clypeus (81) very broadly triangularly emarginate, on each side slightly arcuate; thorax nearly twice as wide as long, the sides in front and posteriorly oblique, at middle slightly sinuate; disc moderately convex, a rather deep, median, densely punctured sulcus limited each side by an irregular costa, the surface thence to the sides coarsely and confluently punctured and with two smoother tubercles; elytra a little wider than the thorax, parallel, narrower at apical third, the margin serrulate, the apices obtuse; disc with the usual four costæ, the first nearly entire and straight the others interrupted and irregular, the intervals with alternating smooth and densely punctured spaces, the latter cupreous; body beneath very shining, sparsely punctate, dark bronze, sometimes slightly greenish at middle; prosternum truncate in front, coarsely punctate in both sexes, but smoother at middle in the female; last ventral segment with serrulate margins; anterior femur strongly toothed, the tooth serrulate on its outer edge. Length .40 - .48 inch; 10 - 12 mm. (Fig. 80.)

Male.—Anterior tibiæ (84) slightly arcuate, an obtuse dilatation at tip, an oblique groove above the dilatation extending along the front of the tibia in front of the dilatation; middle tibia feebly arcuate and slightly thickened below the middle; posterior tibia straight; last ventral segment (82) semi-circularly emarginate, a vague median depression; last dorsal coarsely punctate, emarginate at tip.

Female.—The tibiæ nearly straight, the anterior not dilated; last ventral (83) longer than in the male and with a small semi-circular notch; last dorsal coarsely punctate, feebly emarginate.

This species is one of a small group in which the markings are very similar, and consequently difficult to distinguish, except by other characters, principally sexual. The present species is notable in having the joints of the antennæ from the fourth to the tenth of equal width, the usual form is more slender externally. The male is peculiar in not having the prosternum very differently sculptured from the female, the usual punctuation is denser and finer.

Occurs not uncommonly in Colorado. I have seen others in the cabinet of Mr. Ulke from New Mexico, Arizona and California.

18. **C. scabripennis** Lap. et Gory.—Form of *femorata*, a little more acute posteriorly, color brassy or slightly cupreous; antennæ more slender externally, greenish blue ♂ or subcupreous ♀, third joint as long as the next two; front rather flat, densely punctate and green ♂, or slightly convex, more coarsely punctate and more or less cupreous ♀, callosities in both sexes; clypeus (86) very broadly not deeply triangularly emarginate at middle, on each side rounded; thorax twice as wide as long, narrowed at apex and base, sides at middle nearly parallel, disc moderately convex, a vague median channel densely punctured, wider in front, limited each side by a slightly elevated smooth space, between which and the sides the surface is irregular, very coarsely and confluently punctate, forming transverse plicæ; elytra wider than the thorax, parallel, narrowed at apical third, the margin serrulate the apices separately obtuse; disc slightly convex, the four costæ distinct, but more or less interrupted and with anastomozing lines, the surface densely, moderately, finely punctured, the basal fovea rather feeble; body beneath coarsely not densely punctate, the metasternum more densely and finely; prosternum not lobed in front; anterior femur with a moderately strong tooth crenulate on its distal margin; last ventral segment with serrulate margin. Length .34 - .42 inch; 8.5 - 10.5 mm. (Fig. 85.)

Male.—Prosternum moderately, densely and rather coarsely punctate, sparsely pubescent; anterior tibia (89) arcuate, moderately dilated at apical fourth; middle tibia arcuate, slightly broader near the apex, the posterior arcuate; last ventral segment (87) semi-circularly emarginate; last dorsal coarsely punctate feebly emarginate at apex.

Female.—Prosternum coarsely and much more sparsely than in the male; anterior and middle tibiæ feebly arcuate, the posterior straight; last ventral (88) with a very small semi-circular emargination; last dorsal coarsely and densely punctate, the apex emarginate.

The color of the under surface may vary from æneo-cupreous to greenish. I have seen a specimen from the Museum of Comparative Zoology quite green above. From all the other species of the group which follow (with truncate prosternum) this must be distinguished

primarily by the male sexual characters; secondarily it will be observed that the thorax here is shorter and more abruptly narrowed at base.

Occurs in Canada, New York and the New England States.

19. **C. trinervia** Kby.—Form nearly that of *femorata*, subdepressed, piceous, with æneous surface lustre, the punctured spaces of the elytra cupreous, body beneath cupreous; antennæ bronzed, gradually more slender to tip, third joint as long as the next two; front green, rather flat ♂, cupreous, slightly convex ♀, coarsely and closely punctured, with two small callosities; clypeus (91) broadly triangularly emarginate at middle, the notch sometimes oval at bottom, on each side arcuate; thorax twice as wide as long, sides rather abruptly wider in front, then slightly convergent and near the hind angles abruptly narrowed, but less so than in front; disc moderately convex, a moderately deep median sulcus densely punctured, on each side an irregular elevation, near the sides usually with two tubercles placed obliquely, the surface otherwise densely and coarsely punctured; elytra parallel, narrowed at apical third, the margin serrulate, the apices obtuse; disc subdepressed, with three more or less interrupted costæ with intercurrent elevations, the fourth costa close to the margin and inconspicuous; intervals between the costæ with alternating, densely punctured, and smoother spaces; body beneath sparsely punctate; prosternum not lobed in front; anterior femur with a broad but obtuse tooth, feebly serrate on its outer edge; last ventral segment with the margin serrulate. Length .36-.56 inch; 9-14 mm. (Figs. 90 and 95.)

Male.—Prosternum very densely punctured and finely pubescent; anterior tibia (94) arcuate, rather abruptly dilated at tip, the dilatation being a lamina arising from the posterior side of the tibia; middle tibia less arcuate, gradually broader to tip, the posterior tibia straight; last ventral segment (92) broadly semi-circularly emarginate, the last dorsal sparsely punctate with a triangular emargination.

Female.—Prosternum coarsely, sparsely punctate; anterior tibia slightly arcuate, gradually wider to tip, the middle less arcuate, not thicker, the posterior straight; last ventral (93) longer than in the male and with a small semi-circular emargination; last dorsal more punctate than in the male, a vague median sulcus and a small apical notch.

As is usual in a species with wide distribution the facies is extremely variable. This results from the greater or less prominence of the costæ and their extent as well as from the variable punctuation. From the aggregate, which has heretofore passed as *trinervia* in our cabinets, I have separated a number of species—some of which follow immediately—others belong to the series with the prosternum feebly lobed in front. These differ in their sexual characters in addition to the presence of the lobe. There remains, notwithstanding, the separation of these, an aggregate of variable facies with all intergrades of form and sculpture, which must by their sexual characters be considered *trinervia*. It will therefore be necessary in examining specimens to look closely to the sexual characters.

In the more northern specimens (from New England States, Canada and northward) the individuals are usually smaller and with the elytral costæ well marked often entire, the thorax is also often slightly narrowed from the post apical dilatation to the base, while in the southern and western forms the thorax is in shape quite like *femorata*. The color beneath is always brassy or cupreous, those mentioned by LeConte as entirely green beneath belong to *caurina* or *carinipennis*.

Occurs from the Hudson's Bay region through Canada and the New England States as far south as North Carolina; from the Middle States it extends westward to Colorado, New Mexico, thence to Utah, and to Alaska. I have never seen specimens from our Pacific States.

20. **C. carinipennis** Lec.—Form rather more elongate than *femorata*, piceous, the punctured spaces dark bronze or coppery, body beneath either æneous or sometimes entirely green; antennæ æneous in both sexes, gradually more slender to the tip, third joint as long as the next two; front rather flat ♂, densely punctured and somewhat greenish or slightly convex ♀ more coarsely punctured and æneous with feeble callosities; clypeus (101) rather broadly triangularly emarginate, on each side arcuate; thorax twice as wide as long, narrowed at apex and base, at middle nearly parallel; disc feebly convex, a distinct broad median channel densely punctured, limited each side with a more elevated smoother space, near the front angles a smooth space, the surface otherwise densely and coarsely punctured; elytra a little wider than the thorax, sides parallel, gradually narrowed at apical third, sides feebly serrulate, apices obtuse, disc feebly convex, the first costa nearly entire, the second and third distinct but interrupted by the punctured spaces, the fourth finely elevated, intervals with alternating densely punctured and smooth spaces conjointly of nearly equal areas, the basal fovea not deep; body beneath not densely punctured, the punctures somewhat elongated, prosternum not lobed in front; anterior femora with a moderate tooth very feebly serrulate on distal edge; last ventral segment with serrulate margin. Length .36 - .50 inch; 9 - 12.5 mm. (Fig. 100.)

Male.--Prosternum coarsely and moderately densely punctured, sparsely pubescent; anterior tibia (104) arcuate and with a deep sinuation one-third from the apex and a dilatation from the posterior border of the tibia from the emargination to the apex; middle tibia slightly arcuate and feebly dilated at tip, the posterior straight; last ventral segment (102) deeply semi-circularly emarginate, the last dorsal moderately punctate, feebly emarginate at apex.

Female.—Prosternum very coarsely punctate at the sides nearly smooth at middle; anterior and middle tibiæ very feebly arcuate, the posterior straight; last ventral segment (103) longer than in the male, the apex with a scarcely perceptible truncation, usually with a slightly elevated serrulate ridge in front of the apex, last dorsal coarsely sparsely punctate, a small triangular emargination at apex.

In sculpture this species occupies an exactly intermediate position between *ludificata* and *trinervia*, the sexual characters of the male apart from the last ventral are also intermediate. As already remarked, a strict regard for the sexual peculiarities is necessary to enable the species to be correctly separated.

Four female specimens in my cabinet from Nevada are entirely green beneath.

Occurs in Colorado and Nevada.

21. **C. caurina** n. sp.—Form nearly as in *femorata*, piceous, surface dark bronze, the punctured spaces usually cupreous, rarely greenish, body beneath æneous, sometimes slightly greenish along the middle; antennæ more slender to tip, greenish ♂ or cupreous ♀, third joint as long as the next two; front ♂ rather flat, greenish, densely punctate and with two callosities, or in ♀ more convex, more coarsely punctured and cupreous; clypeus (106) very broadly triangularly emarginate at middle, arcuate each side; thorax nearly twice as wide as long, sides at middle nearly parallel or slightly sinuate, at apex and base narrowed; disc feebly convex, median line broadly depressed and densely punctured, limited each side by an irregular but rather broad smoother space, usually two callosities toward the side, the surface otherwise densely and very coarsely punctured; elytra a little wider than the thorax, parallel, narrowed at apical third, the margin serrulate, the apices obtuse; disc subdepressed, the first costa distinct, sometimes nearly entire, the second and third more or less interrupted, the fourth existing as a finely elevated line, the intervals with densely punctured spaces of irregular shape, and broad smoother spaces with reticulating lines near the sides, basal fovea moderate; body beneath sparsely punctate; prosternum truncate in front; anterior femur with rather obtuse tooth, very feebly serrulate; last ventral segment with margin serrate. Length .34 - .44 inch; 8.5 - 11 mm. (Fig. 105.)

Male.—Prosternum densely punctured, sparsely pubescent; anterior tibia (109) arcuate, the inner edge with a rather deep notch one-third from the apex, and an obtuse dilatation narrowing again at the tip; middle tibia arcuate, rather abruptly dilated at apex, posterior tibia straight; last ventral (107) with deep, semi-circular emargination and vaguely depressed along the middle; last dorsal sparsely punctate, triangularly emarginate at tip.

Female.—Prosternum coarsely sparsely punctate; anterior tibia feebly arcuate, not dilated at tip, middle and posterior straight; last ventral (108) with a feeble emargination limited in front by a distinctly elevated transverse carina; last dorsal coarsely punctate, with a very feeble notch at middle.

This is one of the species separated from the series formerly thought to be varieties of *trinervia*. On comparison the present species differs from *trinervia* and *carinipennis* in having the costæ much less distinct and more interrupted, and the densely punctured spaces less numerous and the smooth spaces consequently much larger. The true differences must, however, be looked for in the sexual characters as figured.

Occurs in Colorado, Nevada and Oregon.

22. **C. californica** Lec.—Form very like *trinervia*, but rather more depressed and broader; color dark cupreo-æneous, sometimes slightly greenish, beneath rather brassy, sometimes slightly greenish; antennæ greenish ♂ or cupreous ♀, gradually more slender to the tip, the third joint as long as the next two; front flat, greenish, more densely punctured and slightly pubescent ♂, slightly convex, æneous, more coarsely punctured ♀ and with two indistinct callosities in both sexes; clypeus (111) with a broadly oval emargination at middle, arcuate each side; thorax twice as wide as long, narrowed at apex and base, the sides at middle often slightly sinuate; disc moderately convex, a median, broad, densely punctured sulcus limited each side by a broad elevated space which is smooth in front and very coarsely punctate posteriorly, two oblique callosities near the side, the surface otherwise densely and coarsely punctate; elytra a little wider than the thorax, parallel, narrowed at apical third, the margin feebly serrulate, the apices obtuse; disc with the first costa entire, but less elevated and broader near the base, the other costa interrupted, the third quite oblique, often joining the second at middle, the intervals between the costæ with alternating smooth and punctured spaces, the punctuation dense or sparse in places, the basal depressions rather feeble; body beneath coarsely but sparsely punctate, the ventral segments with distinct lateral callosities; prosternum (99) with a short, broad lobe in front; anterior femur with a moderate tooth, serrulate externally; last ventral segment serrulate at the sides and with a feeble submarginal elevation. Length .40 - .76 inch; 10 - 19 mm. (Fig. 110.)

Male.—Prosternum densely punctate, sparsely pubescent; anterior tibia (114) flexed at apex and base and with a nearly semi-circular dilatation at apical fourth; middle tibia slightly arcuate and gradually broader at apical third, the posterior straight; last ventral segment (112) deeply semi-circularly emarginate, the last dorsal coarsely punctate, acutely notched at middle.

Female.—Prosternum more convex, more coarsely and not densely punctured; anterior tibia feebly arcuate, the middle and posterior straight; last ventral (113) subtruncate at apex, the angles acute, last dorsal cribrately punctured with a slight notch at tip.

This species seems to vary more in size than in any of those with the sculpture of the style of *trinervia*, and its smaller forms greatly resemble some of those, especially *caurina*, and for its separation the presence of the prosternal lobe, although feeble, and the sexual characters will suffice.

With this species I have united *vulcanica* Lec. as a smaller form.

Occurs in the northern part of California and in Nevada.

23. **C. Blanchardi** n. sp.—Form nearly as in *dentipes*, but less depressed, surface above very distinctly bronzed, beneath similar in color but more shining; antennæ ♂ greenish, ♀ bronzed, gradually more slender to the tip, third joint as long as the next two; front flat, green, densely punctured and pubescent ♂, or slightly convex, coarsely and less densely punctured ♀, with two callosities less strongly indicated ♀; clypeus (115) broadly but not deeply triangularly emarginate; thorax twice as wide as long, narrowed at apex and base, the sides almost regularly arcuate, disc feebly convex, a vague, median, densely punctured sulcus, with a slightly elevated, less punctured space each side, a vague, oblique,

less punctured space externally, the surface otherwise densely and coarsely punctured; elytra a little wider than the thorax, gradually narrowed from the middle to the apex, the sides feebly serrate, the apices obtuse; disc subdepressed, the first costa sharply elevated from the apex to the middle, extending to the base in an irregular smooth space, the other costæ broadly interrupted forming irregular, narrow, smooth spaces, an obliquely placed densely punctured space at apical third between the first and third costæ, a smaller space near the middle between the ends of the second costa, the basal foveæ shallow, the surface moderately coarsely and rather irregularly punctured; body beneath very shining, the punctures moderately coarse and not closely placed, ventral segments without distinct lateral callosities; prosternum distinctly lobed in front, the lobe short; anterior femur with moderate tooth, serrulate on its distal edge; last ventral segment with serrulate margin, and slightly elevated submarginal ridge. Length .40 - .50 inch; 10 - 12.5 mm. (Fig. 114.)

Male.—Prosternum densely punctured and finely pubescent; anterior tibia (119) arcuate, sinuate internally one-third from tip and from that dilated to the apex; middle tibia arcuate and gradually broader near the tip, the posterior very slightly arcuate; last ventral segment (117) semi-circularly emarginate; last dorsal coarsely punctured at apex and sides, the tip slightly emarginate.

Female.—Prosternum coarsely not densely punctate, scarcely pubescent; anterior and middle tibiæ arcuate, the latter less so, not broader at tip, posterior tibia straight; last ventral (118 longer than in the male, a very narrow but moderately deep notched at apex; last dorsal cribrately punctured, entire at apex.

It is remarkable that a species from a locality from which this comes should have remained so long unseparated, it having doubtless been mixed with *dentipes* as a smoother and smaller variety. To the acute observation of Mr. Fred. Blanchard we are indebted for its recognition, and by him my attention was first directed to the variation of the form of the prosternum in this genus. I take great pleasure in making his name the specific appellation of this insect as an evidence of my appreciation of his careful study as well as of his many kindnesses.

Occurs in Massachusetts (Tyngsboro'), District of Columbia and Lake Superior region.

24. **C. quadrilineata** Lec.—Form rather broad, depressed, piceous, the punctured spaces with dark bronze lustre, the elevated spaces alone shining, beneath coppery bronze; antennæ dark bronze ♀ or greenish ♂ slightly more slender to tip, third joint a little longer than the next two; front very slightly convex, coppery bronze in both sexes, more densely punctured in the male, the occipital carina bifurcating on the front and with two small tubercles ♂ or with the sculpture coarser and more confused ♀; clypeus 121 with an oval emargination at middle, rounded each side; thorax twice as wide as long, narrowed at apex and base, widest slightly behind the middle, the sides at middle slightly sinuate; disc moderately convex, a deep, median, densely punctured sulcus, on each side a broad, smooth, slightly elevated space, a narrower, sinuous, elevated space nearer the side, the surface otherwise coarsely and densely punctured;

elytra a little wider than the thorax, sides parallel at base, narrowed at apical two-fifths, the margin feebly serrulate, the apices obtuse; disc feebly convex, basal fovea rather deep, the first costa elevated from apex nearly to middle, then expanding in a smooth space; the second costa slightly elevated near apex, then expanding in a wide, smooth space, again narrowing, but becoming somewhat wider near the base; third costa indicated by an oblique, smooth line, the fourth scarcely at all indicated; the intervals between the costæ and smooth spaces very densely and finely punctured, except a space at and behind the humeral umbone; body beneath coarsely not closely punctate; prosternum very distinctly lobed in front; ventral segments with feebly indicated, smooth, lateral spaces, the margin of the last segment serrulate; anterior femur with an acute tooth, serrulate on its distal edge. Length .46 - .56 inch; 11.5 - 14 mm. (Fig. 120.)

Male.—Prosternum densely punctured with a smooth elevated median line, sparsely pubescent; anterior tibia (124) slightly arcuate, a slight subbilobed dilatation extending one-third from the tip; middle tibia slightly arcuate, thickened at apex, the posterior straight; last ventral segment (122) semi-circularly emarginate at apex, vaguely concave at middle; last dorsal coarsely punctate, subtruncate at apex.

Female.—Prosternum with very coarse punctures, not closely placed, median smooth space distinct; anterior tibia slightly arcuate, the middle and posterior nearly straight; last ventral segment (123) with a slight triangular notch.

The extent of the smooth spaces formed by the dilatation of the costæ is variable. The aspect of the species is peculiar, and totally unlike any other in our fauna.

I have seen three ♂ specimens in the cabinet of Dr. LeConte from New Mexico and one ♀ in my cabinet from Arizona.

25. **C. excisa** Lec.—Form rather broad, nearly as in *femorata*, but rather more acute posteriorly, color dark bronze, the punctured spaces somewhat cupreous, beneath brassy; antennæ cupreous, narrower to tip, third joint as long as the next two; front rather flat, coarsely, closely punctate, sparsely pubescent, the occipital carina bifurcating on the vertex, two small, round callosities at the middle of the front; clypeus (126) with a broadly oval emargination at middle, arcuate each side; thorax nearly twice as wide as long, narrower at base, the sides suddenly narrowing at apex and obliquely at base; disc moderately convex, a vague, median depression with a smooth line posteriorly, a large callosity each side of middle in front, another oblique nearer the side, two callosities on each side near the base, more or less confused, the surface otherwise coarsely and subconfluently punctured; elytra wider than the thorax, the humeri quite prominent, sides subparallel, obliquely narrowed at apical third, the margin serrate, the apices obtuse; disc moderately convex, the first costa elevated from apex to near the base expanding in a broad space, the other costæ interrupted and broadly expanded in smooth spaces, the fourth finely elevated, the basal fovea moderately deep, two discal densely punctured foveæ, the first one-third from apex, transverse, extending from the first to the fourth costa, a second in front of middle, larger, extending from the first to the third costa; the smoother spaces formed by the dilated and confluent second and third costæ are placed posteriorly to these foveæ and between them and with a larger smooth space near the base extending from the first to the third costa; the surface otherwise than men-

tioned is moderately, densely punctate; body beneath shining, sparsely punctate with large elongate punctures, the ventral segments with a large lateral callosity; prosternum distinctly lobed in front; anterior femur with an acute tooth serrulate on its outer edge; margin of last ventral segment serrulate. Length .36 - .50 inch; 9 - 12.5 mm. (Fig. 125.)

Male.—Prosternum flat, densely punctured and pubescent; anterior tibia (129) slightly arcuate and with a feeble dilatation at apical fourth; middle tibia arcuate, thicker at tip; posterior straight; last ventral segment (127) semi-circularly emarginate; last dorsal sparsely punctate, triangularly emarginate.

Female.—Prosternum convex, and smoother at middle, at sides coarsely punctured; tibiæ nearly straight; last ventral segment (128) broadly emarginate-truncate, carinate at basal half of the median line; last dorsal coarsely closely punctate and entire.

The elytral sculpture is actually that of the *trinervia* series with the confluence of the costæ more sharply defined and limited. In a series of about twenty specimens there is very little variation.

Occurs in Arizona.

26. **C. texana** Lec.—Form rather elongate with the general habitus of *dentipes*, but more convex, cupreo-æneous, the thorax usually more cupreous; antennæ gradually more slender to tip, greenish ♂, cupreous ♀, the third joint as long as the next two; front rather less convex, slightly greenish, more densely punctured and slightly pubescent ♂, more coarsely punctured ♀ two feeble callosities in both sexes; clypeus (131) feebly but broadly emarginate at middle, arcuate each side; thorax nearly twice as wide as long, narrowed at apex and base, widest one-third from apex, the sides at middle feebly sinuate; disc moderately convex, the median sulcus very feeble or wanting, on each side near the front a slight callosity, external to which is a depression, the surface sparsely punctate near the middle, densely and coarsely punctate at the sides; elytra a little wider than the thorax, gradually narrowing to apex, almost from the humeri, the sides feebly serrulate, the apices obtuse; the subsutural costa elevated at apex, depressed and forming a broad smooth space near the base, the second costa broadly interrupted and forming broad, smooth spaces, the third distinct at the middle of its extent, the surface rather coarsely and closely punctate, densely near the sides, the basal and humeral depressions moderately deep; body beneath rather coarsely punctured, rather densely at the sides, ventral segments with distinct callosities; prosternum with a well marked lobe in front; anterior femora with a moderate tooth, sinuous and serrulate on its distal margin; last ventral segment with a serrulate margin and a slightly elevated submarginal ridge. Length .34 - .48 inch; 8.5 - 12 mm. (Fig. 130.)

Male.—Prosternum moderately, densely punctate, especially in front, and with a smooth median space; anterior tibia (134) distinctly arcuate, sinuate on its inner edge one-third from apex, below which is a dilatation which narrows again at the tip; middle tibia slightly arcuate, the posterior straight; last ventral (132) deeply semi-circularly emarginate, the last dorsal coarsely punctate and at apex feebly notched.

Female. Prosternum coarsely and sparsely punctate, a smooth median space; anterior tibiæ slightly arcuate, the middle and posterior straight; last ventral (133) slightly truncate at tip; last dorsal coarsely punctate and entire.

This species is not likely to be confused with any others of its series; the prosternal lobe is here better marked than in any except *exesa*.

Occurs in Colorado, Texas, Arizona and California.

27. **C. malii** n. sp.—Form rather broad, subdepressed, color above variable from dark bronze to bright coppery red, beneath more or less cupreous; antennæ gradually more slender to tip, third joint as long as the next two, color greenish in ♂ or dark bronze ♀; front slightly convex in both sexes, very little more closely punctured in the male and with two median callosities and a chevron above; clypeus (136) broadly triangularly emarginate at middle; thorax twice as wide as long, narrowed at apex and base, widest slightly behind the middle; disc moderately convex, median line vaguely channeled and usually more densely punctate, the surface otherwise densely, coarsely punctured with usually an oblique callosity near the side; elytra a little wider than the thorax, parallel, narrowed at apical third, the margin serrulate, the apices obtuse; disc with the costæ rather feebly indicated and with badly defined densely punctured spaces, the first on the interval between the first and second costæ, the second at the end of the third costa (these often confluent) a third near the middle interrupting the second costa, basal fovea rather feeble, the surface otherwise rather coarsely not densely punctate; body beneath rather sparsely, coarsely punctate, the ventral segments with distinct lateral callosities; prosternum with a short lobe in front; anterior femora with a prominent tooth, serrulate on its distal edge; last ventral segment with serrulate border, but without submarginal ridge. Length .26 - .42 inch; 6.5 - 10.5 mm. (Fig. 135.)

Male.—Prosternum coarsely and closely punctate; anterior tibia (139) arcuate, abruptly dilated at apical fourth, the dilatation narrowing at tip; middle tibia arcuate, slightly thicker at tip, the posterior straight; last ventral segment (137) semi-circularly emarginate, the last dorsal sparsely punctate and slightly emarginate at tip.

Female.—Prosternum a little less closely punctate; anterior tibia slightly arcuate, the middle and posterior straight; last ventral (138) with a small, semicircular emargination, the last dorsal sparsely punctate and truncate.

The variation in surface color is from the darker shades seen usually in *femorata* to that with the entire surface quite red; beneath the difference is less marked.

Specimens from the Sacramento Valley were sent me by Mr. L. E. Ricksecker as infecting apple trees, others collected in Owen's Valley could not possibly have had that habit.

Occurs in California, Nevada, Utah and Colorado.

28. **C. pusilla** Lap. et Gory.—Form nearly as in the small specimens of *femorata*, dark coppery bronze, slightly shining; antennæ gradually more slender to the tip, bronzed in both sexes, third joint as long as the next two; front slightly more convex in the female, punctuation rather coarse, a little denser in the male, two small middle callosities in both sexes; clypeus (141) with a small but broad emargination at middle, truncate each side; thorax twice as wide as long, narrowed at apex and base, but more abruptly in front, the sides at middle

nearly straight, disc feebly convex, a vague median depression and others laterally, surface coarsely, densely and equally punctured; elytra a little wider than the thorax, parallel, narrowed at apical third, the margins serrulate, the apices obtuse; disc feebly convex, the three costæ very feebly indicated, the second and third interrupted by vague oblique foveæ, the surface rather coarsely, but closely punctured; body beneath more shining than above, the punctures moderately closely placed, the ventral segments without lateral callosities; prosternum distinctly lobed in front, the lobe short; last ventral segment with serrulate margin, but without submarginal elevated line; anterior femur with moderately strong, serrulate tooth. Length .22 - .28 inch; 5.5 - 7 mm. (Fig. 140.)

Male.—Prosternum moderately, coarsely and closely punctate, sparsely pubescent; anterior tibiæ (144) arcuate, with a small semi-circular dilatation before the apex; middle tibiæ slightly arcuate, the posterior straight; last ventral (142) with a small semi-circular emargination, the last dorsal sparsely coarsely punctate, feebly emarginate at tip.

Female.—Prosternum more coarsely, less closely punctate, not hairy; anterior tibia scarcely arcuate, the middle and posterior straight; last ventral (143) longer than in the male, with a very slight emargination, the last dorsal coarsely punctate, the apex entire.

This is a small and inconspicuous species quite constant in its color, but variable in the distinctness of its markings as the costæ may almost entirely disappear and the foveæ become very vague. The basal depression of the elytra usually remains quite distinct.

Occurs from Massachusetts to Wisconsin and North Carolina; does not seem to be rare.

29. **C. mixa** n. sp.—Form moderately elongate, subdepressed, dark cupreous, subopaque, beneath more shining and paler; antennæ dark bronze, gradually more slender to the tip, third joint as long as the next two; front ♂ feebly convex, densely punctured slightly hairy; clypeus (146) with a shallow, but very broad emargination at middle; thorax twice as wide as long, slightly narrowed at apex and base, sides at middle slightly arcuate; disc slightly convex, a vague median depression and a slightly impressed line posteriorly, a slight post-apical depression and smoother near the sides; surface very coarsely and closely punctate, subconfluent near the sides; elytra a little wider than the thorax, parallel, narrowed at apical third, the margin serrulate, the apex obtuse; disc obsoletely costate, the first costa alone elevated from the apex to the middle, the basal and humeral foveæ moderately deep, three very vague discal foveæ, one at apical third between the first and second costæ, a second more anterior at the end of the third costa, the third interrupting the second costa a little in front of middle, surface coarsely punctured, sparsely on the disc, densely at the sides; body beneath coarsely, sparsely punctate, the ventral segments without callosity; prosternum very distinctly lobed in front; anterior femur with a rather small serrulate tooth at middle; last ventral segment distinctly serrulate along its margin. Length .32 .40 inch; 8 - 10 mm. (Fig. 145.)

Male. - Prosternum coarsely, densely punctate, sparsely pubescent; anterior tibiæ 149) arcuate and with a deep oblique sinuation one-fourth from the tip, below which is a moderate dilatation; middle tibia slightly arcuate, the posterior slightly sinuous; last ventral segment (147) deeply semi-circularly emarginate; last dorsal coarsely punctate and rather deeply triangularly emarginate.

Female.—Prosternum coarsely not densely punctate; anterior and middle tibiæ slightly arcuate, the posterior straight; last ventral segment (148) slightly emarginate and with a slight transverse ante-apical lamina; last dorsal coarsely, closely punctate, the apex slightly emarginate.

An inconspicuous species resembling a diminutive *dentipes*, but differing in its style of ornamentation as well as by the sexual characters.

Occurs in western Nevada, and at Calaveras, Cal.

Group V.

The following species form a small and apparently natural group characterized by a subcylindrical, parallel form, with the elytra very little wider than the thorax. The upper surface is usually slightly pubescent with grayish hair, but this with careless handling is apt to be lost. The thorax is convex, and while but one exhibits a faint trace of median depression several have callosities. The punctuation is dense and rather coarse. In some respects this group seems to connect the first and second groups, but the species appear, on the whole, to be degraded forms of the series with the last ventral segment serrate, and to represent, or at least parallel the group placed at the end of the other series.

The prosternum is lobed in all the species, the lobe short and indistinct in the bronze species, very prominent in the blue species.

The following table will assist in the determination of the species:

Anterior femur distinctly toothed.
  Color dark bronze or greenish.
    Thorax with distinct callosities.
      Elytral costæ distinct; sides of thorax regularly arcuate.. .....30. **deleta.**
      Elytral costæ replaced by smooth lines; sides of thorax narrowed at apex and base.....31. **deserta.**
    Thorax without callosities, the punctuation coarse, but not crowded; sides regularly arcuate; costæ of elytra distinct.....32. **lixa.**
  Color bright blue, green or violaceous.
    Thorax with faint median depression (in the larger specimens), sides narrowed at base; elytral sculpture very feeble.....33. **cyanella.**
Anterior femur without tooth.
  Color blue-green.
    Surface densely punctulate; sides of thorax regularly arcuate; apex of abdomen exposed .....34. **humilis.**

Of the five species of this group three occur in California (two Southern, one from the North), the other two are from Arizona.

30. **C. deleta** Lec.—Moderately elongate, subcylindrical, dark bronze, sometimes brownish or greenish, sparsely pubescent; antennæ rather short, gradually

more slender to tip, third joint not quite as long as the next two, greenish in ♂, bronze in ♀; head slightly convex and with two frontal tubercles in both sexes, green and more densely punctate ♂, bronze and more coarsely punctate ♀; clypeus (151) with an oval emargination at middle; thorax twice as wide as long, sides regularly arcuate, disc convex, very coarsely and closely punctate and with four callosities transversely placed (the outer indistinct) and a median posterior smooth line; elytra scarcely wider than the thorax, parallel, narrowed at apical third, the margin very finely serrulate, the apices obtuse; disc convex, the first costa distinctly elevated from apex to middle, the outer costæ indistinct and interrupted; basal fovea distinct, the discal foveæ scarcely visible; body beneath more shining than above, not densely punctate, sparsely pubescent, the ventral segments with indistinct lateral callosities; last ventral segment with serrulate border; prosternum with a small lobe in front; anterior femur with a very acute tooth, serrulate on its outer edge. Length .28 - .36 inch; 7 - 9 mm. (Fig. 150.)

Male.—Prosternum coarsely and closely punctate, sparsely pubescent; anterior tibia (154) feebly arcuate, stouter toward the tip, with a slight and short dilatation near the apex; middle tibia slightly arcuate, thickened at the extreme apex; posterior tibia straight; last ventral (152) nearly semi-circularly emarginate.

Female.—Prosternum coarsely not closely punctate; anterior tibia slightly arcuate, gradually stouter to the tip; middle and posterior tibiæ straight; last ventral segment (153) oval and entire at apex, a slight sinuation each side limited by the last serration of the margin; last dorsal coarsely and densely punctured and entire.

In one specimen before me the body beneath is entirely green. As a rule the punctures of the under side, particularly of the abdomen, are much coarser and more distinct than in *deserta*. While there is some little variation in sculpture, the first or subsutural costa remains distinct in its posterior half.

Occurs in California (Owen's Valley and northward) and Washington Territory.

31. **C. deserta** n. sp.—Subcylindrical, dark coppery bronze, feebly shining, sparsely pubescent; antennæ slightly greenish, gradually more slender to tip, the third joint as long as the next two; front slightly convex, rather shining, not densely punctured, an indistinct chevron above, sparsely pubescent and greenish ♂; clypeus (156) very broadly but not deeply emarginate; thorax nearly twice as wide as long, sides rounded at apex and base, disc convex, very coarsely and closely punctured with four callosities arranged in a transverse row in front of the middle and a smooth median line posteriorly; elytra scarcely wider than the thorax, parallel, narrower at apical third, the margin very feebly serrulate, the apices obtuse, disc convex, the costæ replaced by smoother lines, basal fovea deep, two indistinct discal foveæ, one on the second smooth line one-third from base, the second one-third from apex between the first and second smooth lines, surface rather coarsely and closely subgranulately punctured; body beneath more shining than above, very coarsely and closely punctate, the punctures of the abdomen much finer and submuricate; margin of last ventral segment distinctly serrulate; prosternum with a very short lobe in front; anterior femur with a small acute tooth, serrulate on its distal edge. Length .35 inch; 9 mm. (Fig. 155.)

Male.—Prosternum densely punctate, sparsely pubescent; anterior tibia (158) slightly arcuate, with a small semi-circular dilatation before the apex; middle and posterior tibiæ straight; last ventral segment (157) broadly arcuately truncate; last dorsal sparsely punctate, entire.

Of this species I have seen but three males. It resembles very closely and might readily be mistaken for *deleta*, which has, however, the first costa at least elevated near the apex. In *deserta* the clypeus is rather more broadly emarginate and the anterior tibia of the male otherwise formed.

Occurs in the Mojave Desert of California, also near San Diego.

32. **C. lixa** n. sp.—Form subcylindrical, moderately convex, dark bronze, moderately shining, sparsely pubescent; antennæ dark bronze, gradually more slender to the tip, the third joint but little longer than the second or fourth; front convex, coarsely and moderately closely punctured in both sexes and slightly pubescent; clypeus (160) broadly triangularly emarginate at middle, rounded on each side; twice as wide as long, base and apex equal, the sides regularly arcuate; disc convex, coarsely, deeply and rather closely punctate, more densely at the sides, often with a median smooth space posteriorly, but without distinct callosities; elytra scarcely wider than the thorax, parallel, narrowed at apical third, the margins finely serrulate, the apices obtuse; disc convex, the first costa distinctly elevated from the apex to middle or even more, and continued by a smooth line, the second and third indicated by smooth lines, basal fovea distinct, a faint, more densely punctured fovea one-third from apex external to the second costa, another in front of middle interrupting the second costa, surface otherwise relatively coarsely and rather closely punctate; body beneath more shining than above, the punctuation less coarse and moderately close along the side of the body and ventral segments, these with a feeble lateral umbone, the last segment with serrulate margin; anterior femur with a small, rather acute tooth, serrulate on its outer edge; prosternum scarcely lobed in front. Length .16 - .28 inch; 4 - 7 mm. (Fig. 159.)

Male.—Prosternum coarsely and moderately closely punctured, scarcely punctured near the anterior margin: anterior tibia (163) slightly arcuate and gradually thicker to tip and with a very faint dilatation at apex; middle tibia very slightly arcuate, the posterior straight; last ventral segment (161) nearly semicircularly emarginate, last dorsal coarsely sparsely punctate, slightly emarginate at apex.

Female.—Prosternum more coarsely and sparsely punctate, a median smooth space posteriorly; tibiæ nearly straight; last ventral (162) longer than in the male, the apex truncate, with distinct but not prominent angles; last dorsal coarsely, sparsely punctate, apex entire.

This species might be mistaken for a small form of *deleta*. It is, however, more cylindrical, the punctuation relatively coarser, and the thorax without callosities. The male sexual characters are not different, but the last ventral of the females is distinctly so.

Occurs in Texas and Arizona, taken rather abundantly by Morrison in the latter region.

33. **C. cyanella** n. sp.—Form subcylindrical, very slightly depressed, color bright blue or green, becoming violaceous on the elytra rarely, surface slightly pubescent, beneath greenish blue; antennæ greenish ♂ or piceous ♀, a little more slender to the tip, the third joint as long as the next two; front slightly convex in both sexes, more densely punctured in the male and with two small callosities, more coarsely punctured in the female, the callosities almost obliterated; clypeus (165) with a small oval emargination at middle, arcuate each side; thorax twice as wide as long, or even a little wider, arcuately narrowed in front, obliquely at base, disc convex, with a vague median depression in the larger specimens, which is wanting in the smaller ones, a distinct rounded fovea near the side, surface coarsely, deeply and moderately densely punctured, and in the largest specimens transversely confluent near the sides; elytra a little wider than the thorax, parallel, apical third arcuately narrowed, the margin scarcely serrulate, the apices obtuse, disc feebly convex, the costæ faintly indicated only in the larger specimens and then by smoother lines, the basal fovea not deep, the surface somewhat irregular, and occasionally with faint traces, the first quite small, one-third from apex and near the fourth costa, the second larger on the second costa in front of middle, the surface rather coarsely and not densely punctured, except near the base; body beneath rather sparsely punctate, the ventral segments without lateral callosities, the last segment with serrulate margin; prosternum very distinctly lobed in front; anterior femur with a moderately large tooth with but few serrations externally. Length .20 - .42 inch; 5 - 10.5 mm. (Fig. 164.)

Male.—Prosternum flat, very densely punctate, sparsely pubescent; anterior tibia (168) feebly arcuate, a short and narrow dilatation at tip; middle tibia slightly arcuate, a little thicker at tip, posterior tibia straight; last ventral segment (166) with a shallow semi-circular emargination; last dorsal coarsely punctate and with a rather broad, triangular notch at tip.

Female.—Prosternum flat, more coarsely punctate than in the male; anterior tibia feebly arcuate, the middle and posterior straight; last ventral (167) a little longer than in the male, a barely perceptible notch at apex; last dorsal coarsely punctate and with a slight notch at tip.

The subcylindrical form, blue color and the well lobed prosternum make this species an easily recognized one. The larger specimens do not vary greatly from *deleta* in the elytral sculpture, except that it is more obliterated, while this is even lost as the specimens become smaller, so that the elytra have only the punctuation remaining. The color varies from green to blue and violet, as is usual in blue species. The largest specimen I have seen is in the collection of Mr. H. Edwards, and is that from which the figure was prepared.

Occurs in the mountain regions of northern California near Yreka and Mt. Shasta.

34. **C. humilis** n. sp.—Form subcylindrical, parallel, moderately robust, color bluish green, variable in the direction of the light, subopaque, beneath blue-black, with white pubescence, femora bright æneous; antennæ rather stout, gradually more slender to tip, piceous, the third joint as long as the next two;

front convex, moderately densely punctured; clypeus (170) with a very broad shallow emargination, arcuate each side; thorax twice as wide as long, base wider, than apex, sides very regularly arcuate, disc convex, very densely but equally punctate; elytra very little wider than the thorax, parallel, arcuately narrowed at apical third, the margin serrulate, the apices very obtuse, exposing the tip of the abdomen; disc moderately convex and even, the basal fovea very faint, surface very densely and equally punctate, the punctures a little finer than on the thorax and with a tendency to form oblique strigæ near the sides; body beneath moderately, densely punctate, and clothed with short white recumbent pubescence, sides of abdomen more densely punctulate and pubescent, the margins of the segments on each side sutures two, three and four smooth; last ventral segment with serrulate margin; prosternum rather strongly lobed in front; anterior femur without trace of tooth. Length .22 inch; 5.5 mm. (Fig. 169.)

Male.—Unknown.

Female.—Prosternum flat, closely punctate; the tibiæ all straight; last ventral segment (171) sinuately truncate; last dorsal segment punctate, the tip emarginate.

This species is a diminutive in form of *atrifasciata*, and could have been placed next to it if the last ventral segment had not serrulate margins. I place it, however, among the subcylindrical species, admitting at the same time that it shows a marked relationship with *debilis* in the sculpture and pubescence of the under surface as well as with *atrifasciata* in its general form. It is remarkable in the absence of femoral tooth, and while the specimen is a female it is not probable that the male is otherwise, as I have not observed any differences in all the other species in the form or size of the femoral tooth between the sexes.

One specimen, Arizona.

Group VI.

The species of the small group here separated are of medium or rather large size. They agree in having the thorax widest anteriorly, the sides from the anterior third narrowed to base; the prosternum is not lobed in front, and in both sexes is nearly smooth along the middle; the last ventral segment has the margin devoid of serrulations, although in several the edge is interrupted; in the male the apex is usually very deeply, almost quadrangularly emarginate. The apices of the elytra are rather acute and more or less prolonged in a spine.

The following table will assist in recognizing the species:

Thorax not sulcate at middle, or with a feeble trace of a depression.
  Lateral margin of last ventral segment abruptly interrupted.....35. **serea.**
  Lateral margin of last ventral entire.

Elytra with three golden foveæ on the disc; the second costa interrupted by the anterior fovea and not joining the fourth near the apex. 36. **gemmata.**

Elytra with two indistinct foveæ; the second costa continuous through the anterior fovea and at apex joining the fourth costa.....37. **Merkelii.**

Elytra with two discal cupreous foveæ; second costa interrupted by the anterior fovea and not joining the fourth at apex; disc of thorax with vague median depression.....38. **acutipennis.**

Thorax with a well marked median sulcus; elytral costæ interrupted; last ventral segment with slightly interrupted margin .....39. **libonoti.**

The species of this group, which are all from the extreme southwestern regions of our country, recall in a striking manner the species of the first group by their size, outline and many points in their sexual characters.

35. **C. aerea** Chev.—Form rather elongate, piceous, with feeble bronze surface lustre, beneath more brassy and shining, sometimes slightly cupreous; antennæ bronzed ♂ or piceous ♀, gradually more slender to the tip, the third joint a little longer than the next three; front nearly flat, æneous, densely punctured and finely pubescent ♂, more coarsely and irregularly punctured and with irregular smooth spaces ♀; clypeus (174) deeply triangularly emarginate at middle, arcuate each side; thorax nearly twice as wide as long, obliquely narrowed in front, the sides straight, nearly parallel or slightly convergent to base, the hind angles distinct; disc moderately convex, slightly depressed at middle, sometimes a vague depression at base opposite the middle of each elytron, and with irregular callosities near the sides in front; surface finely sparsely punctured at middle third, with a smooth median line, near the sides more coarsely and densely punctured; elytra a little wider than the thorax, gradually narrowed almost from the humeri, the margin feebly serrulate near the apex, the tips acute; disc moderately convex, the basal and humeral foveæ rather deep, three discal costæ, the first usually well defined from apex to middle, the others finer, more or less interrupted, connected by intervening smooth spaces, one moderately large, densely punctured discal fovea on the second carina one-third from base, usually surrounded by a smooth elevated border, intervals between the carinæ rather finely, not very densely punctured, the punctuation finer and sparser in the scutellar region; body beneath nearly smooth along the median line, except on the abdomen, where the punctures are coarse and sparse, sides of body more densely and finely punctured and slightly pubescent; ventral segments with feeble callosities and with the hind angles slightly prominent; last ventral segment with the margin not serrate, but with an interruption at the posterior third; prosternum slightly arcuate in front, but not truly lobed; anterior femur with a moderately large tooth not serrate. Length .68 - .86 inch; 17 - 22 mm. (Fig. 173.)

Male.—Prosternum with very few fine punctures at middle, a line of piliferous hairs along the sides and very coarse punctures at the sides in front; anterior tibia (177) feebly arcuate, slightly dilated at tip, a slight tooth at the beginning of the dilatation, above which is a distinct notch; middle tibia slightly arcuate, the posterior straight; last ventral (175) with a short, flat carina at middle in front, the apex very deeply emarginate, the angles prominent and sinuately truncate; last dorsal segment coarsely punctured and entire.

Female.—Prosternum as in the male; tibiæ are all nearly straight; last ventral segment (174) sinuately truncate with prominent angles, a broad obtuse carina extending from base nearly to apex.

This is one of the largest species in our fauna and may be at once known by the interrupted margin of the last ventral segment, the edge not being serrate. My first specimen was given me by Dr. C. A. Dohrn, of Stettin, since which others have been collected by Morrison in Arizona. On comparison with the Saunders collection now in the British Museum it bore the name *costifrons* Chev. The facies of the species is quite unlike our others, and it would not have been introduced in the present essay except from the specimens collected by Morrison.

Being somewhat in doubt, however, regarding the status of *costifrons* I communicated with my friend Sallé, who, with his usual kindness, sends me a specimen of *C. ærea* Chev. (*mexicana* Dej.) with the following remarks: "The *C. costifrons* Chev. is very near to it (*ærea*), but the elytral impressions are more round and brilliant golden." From my own comparisons I am satisfied that the characters referred to by Sallé are purely varietal, and that *costifrons* cannot be considered a distinct species.

Occurs in Arizona, extending as far south as Oaxaca, Mexico.

36. **C. gemmata** Lec.—Form moderately robust, subdepressed, broader in the female, color above purple or violet, beneath bright green; antennæ (97) greenish ♂ or purplish ♀, serrate from the fourth joint and slightly more slender to tip, the third joint as long as the next three; front dissimilar in the sexes; clypeus (179) with a very broad, but shallow emargination at middle; thorax twice as wide as long, sides narrowed in front, widest one-third from apex, thence obliquely narrowing to the hind angles which are nearly rectangular; disc moderately convex, slightly irregular, a vague median depression in front, a deeper post-apical oblique impression; surface coarsely punctate, rather sparsely at middle densely and confluently at the sides; elytra wider than the thorax, parallel, obliquely narrowing at apical third, the margin serrate, the apices acute, slightly spiniform; the first costa sharply elevated from apex to middle, the second a little shorter and not joining the first at apex, the third short and scarcely evident, the fourth extending from the apex sharply elevated one-third toward the base; the basal fovea deep and with a golden spot, the first discal fovea a little in front of middle and interrupting the second costa, second one-third from apex between the second and fourth costæ, the third spot nearer the apex between the first and second costæ; the surface very equally, moderately, densely and coarsely punctured; body beneath very coarsely, sparsely punctate, the sides of the ventral segments with a distinct callosity; posterior angles of the ventral segments prominent, the margin of the last ventral not serrate, but with a serrate submarginal ridge; prosternum not lobed in front, the surface in both sexes nearly smooth, with few fine scattered punctures; tooth of anterior femur relatively small but acute, the distal edge indistinctly crenulate. Length .76 - .88 inch; 19 - 22 mm. (Fig. 178.)

Male.—Front densely punctured, surface without callosities, except a slight arcuate elevation on the vertex; anterior tibia (182) slightly arcuate, slightly dilated at apex and very finely serrulate within; middle tibia arcuate, inner margin serrulate; posterior tibia straight; last ventral segment (180) broadly concave at middle, the apex deeply quadrangularly emarginate.

Female.—Front very irregular and very coarsely punctate, a short median carina on each side vaguely concave, vertex with feeble arcuate carina; anterior tibia very slightly arcuate, the middle and posterior straight; last ventral segment (181) longer than in the male, sides slightly sinuate near the tip, the apex sinuously truncate, the angles acute, the median line rather strongly carinate.

This species is one of the largest in our fauna and is conspicuous by the purplish color of its surface, the well marked golden spots and the very regular and even surface sculpture.

Occurs in Arizona, probably near the southern boundary.

37. **C. Merkelii** n. sp.—Form rather robust, piceous; surface faintly bronzed, feebly shining, beneath æneous or slightly cupreous; antennæ æneous, more slender to tip, the third joint rather longer than the next three; front rather flat, very densely punctured, finely pubescent and cupreous in the male, slightly convex, coarsely punctured, a well developed, transverse, biarcuate carina above the antennæ, and another above the middle of the front in the female; clypeus (184) broadly emarginate at middle, arcuate each side; thorax twice as wide as long, widest one-third from apex, sides abruptly broader in front then oblique to the base; disc moderately convex, with a post-apical depression, another near the front angles, another at base, surface finely punctured at middle, more densely and subconfluently near the sides; elytra wider than the thorax, parallel, arcuately narrowed at apical third, the margins serrate, the apices acuminate; disc moderately convex, with the costæ all distinctly elevated, the first extending in front of middle and becoming a smooth line prolonged into the basal fovea, the second at apex joining the fourth, extending forward without interruption to the outer side of the basal fovea, third sometimes arising from the second one-third from apex, extending forward interrupted by a fovea and gradually passing under the humeri, fourth less elevated than the others and close to the margin; basal fovea moderately deep, humeral depression distinct; a cordate fovea, densely punctured near the tip of the third costa, another in front of middle, indistinctly defined, divided by the second costa; surface between the costæ moderately densely punctate, coarser and sparser in the scutellar region; body beneath rather coarsely punctate, more closely at the sides of the abdomen; posterior angles of ventral segments conspicuously prominent, the sides with feeble callosity; margin of last ventral segment not serrate, slightly sinuate at the apical third, a distinctly elevated serrate ridge rather distant from the margin; anterior femur with a relatively feeble notch, not serrate; prosternum truncate in front. Length .60 - .66 inch; 15 - 16.5 mm. (Fig. 183.)

Male.—Prosternum slightly convex at middle, with a few coarse punctures, the anterior angles more densely punctured and slightly pubescent; anterior tibiæ (187) slightly arcuate, not dilated at tip, the inner edge multidenticulate, the middle tibia similar; posterior tibia straight; last ventral segment (185) broadly sulcate at middle, deeply emarginate at apex, the angles prolonged and obliquely truncate; last dorsal coarsely, sparsely punctate, entire.

Female.—Prosternum as in the male, but less punctured at the front angles; anterior tibia slightly arcuate, the inner edge not serrulate; middle tibia arcuate and finely serrulate within, the posterior straight; last ventral (186) strongly carinate at middle, the apex truncate with acute angles; last dorsal more coarsely and densely punctured than in the male, entire.

This species has the same general characters as *gemmata* and *acutipennis*, resembling the former, especially in form, but is a little more robust and with fewer and less distinct elytral spots, the surface color being also different. From the latter it differs in its stouter and more robust form and the absence of median depression of the thorax.

For specimens I am indebted to the kindness of Mr. Aug. Merkel, of New York, to whom I take great pleasure in dedicating it.

Occurs in Texas and Arizona.

38. **C. acutipennis** Chev.—Form moderately elongate, dark bronze, feebly shining; antennæ gradually more slender to tip, the third joint a little longer than the next three, joints four to eleven testaceous ♂ or brownish ♀; front rather flat, densely, coarsely punctured, a little more irregular in female, an elevated chevron near the top; clypeus (189) very broadly triangularly emarginate at middle, on each side arcuate; thorax nearly twice as wide as long, widest one-third from apex, the sides in front rather suddenly narrowed, posteriorly straight and gradually narrowed; disc moderately convex, a very vague median depression, a deeper oblique post-apical depression and another parallel with but distant from the lateral margin; surface sparsely punctate at middle, more densely near the base, coarsely confluently at the sides and a small, oval, finely and densely punctured space in front; elytra a little wider than the thorax, parallel, obliquely narrowed at apical third, the margin scarcely serrate, the apices separately acute; disc feebly convex, the first two costæ long, the third short and median, the fourth visible at apical third, two distinct brassy foveæ, one transverse one-third from apex between the second and fourth costæ, a second a little in front of middle between the first and third, dividing the second costa and a very small spot a little more anterior between the first and second costæ, the surface moderately coarsely punctured, more densely near the apex, basal fovea rather deep; body beneath æneous, greenish in front; abdomen coarsely not closely punctate, the lateral callosities of the ventral segments feeble, the hind angles slightly prominent; last ventral with entire lateral margin; prosternum not lobed in front; anterior femur with a relatively small tooth, not denticulate. Length .44 - .70 inch; 11 - 17.5 mm. (Fig. 188.)

Male.—Prosternum smooth at middle, moderately densely punctured at the sides and slightly pubescent; anterior tibiæ (192) slightly arcuate; feebly dilated at tip, the inner edge finely serrate near the tip; middle tibiæ slightly arcuate and serrulate within; posterior tibiæ straight; last ventral segment (190) deeply quadrangularly emarginate, along the middle broadly sulcate.

Female.—Prosternum almost entirely impunctate; anterior tibiæ feebly arcuate, the middle and posterior straight; last ventral (191) longer than in the male, the sides slightly sinuate, the apex truncate with prominent angles, the median line rather strongly carinate.

In both sexes the last ventral segment has near the margin a feebly elevated serrate ridge. The species has the appearance of a gigantic *sexsignata*. This species, *Merkelii* and *gemmata*, form a very natural group with the costæ well defined; they differ in the number, position and distinctness of the foveæ.

Occurs in Texas, Arizona and Mexico.

39. **C. libonoti** n. sp.—Form moderately elongate, gradually attenuate posteriorly, piceous slightly bronzed, beneath cupreous; antennæ more slender to tip, third joint as long as the next two, æneous ♂, piceous ♀; front rather flat in male, not densely punctured, subopaque, æneous and without distinct callosities, more convex and shining, more coarsely punctured, bronzed, and with two feeble chevrons ♀; clypeus (184) broadly triangularly emarginate at middle, arcuate each side; thorax nearly twice as wide as long, widest slightly behind the apical angles, sides abruptly wider in front, then straight and oblique to base; disc moderately convex, a deep median sulcus limited each side by an obtusely elevated carina, a distinct oblique callosity in front and a depression exterior to it; surface finely punctured in the sulcus, very coarsely and confluently otherwise; elytra wider than the thorax, the humeri rather prominent, sides parallel in front, narrowed at apical third, the margins serrate, the apices acuminate; disc moderately convex, with the usual costæ, the first distinctly elevated from the apex to the middle, the others interrupted and dilated in smooth spaces more or less confluent, the surface otherwise densely punctured, the basal fovea moderately deep, the humeral impression distinct; body beneath æneo-cupreous, shining, sparsely and finely punctate, the ventral segments without lateral callosities, the margin of the last ventral segment not serrate, but with a slight interruption one-third from the apex; prosternum truncate in front; anterior femur with a moderately large tooth, obsoletely serrulate on its distal edge. Length .32 - .48 inch; 8 - 12 mm. (Fig. 183.)

Male.—Prosternum nearly smooth at middle, a very few punctures, more densely punctured in front and at its angles; anterior tibia (187) slightly arcuate, without apical dilatation; middle and posterior tibiæ straight; last ventral segment (185) deeply semi-circularly emarginate; last dorsal coarsely punctured, subtruncate at apex.

Female.—Prosternum and tibiæ as in the male; last ventral (186) larger than in the male, the apex tridentate.

This species is peculiar among those with the elytra acuminate in having the disc of the thorax deeply grooved at middle. It is also remarkable in having practically no difference between the sexes in the prosternum and in the form of the tibiæ.

Collected in Arizona by Morrison.

Group VII.

The species of this group are all of small size, excepting *impressa* and *chalcophoroides*, and have in great part a feeble development of elytral sculpture. They agree in having the last ventral segment with entire margin and the apices of the elytra obtuse.

The following table will assist in the indentification of the species:

Eyes very nearly contiguous on the occiput; thorax subangulate at the sides. 40. **impressa.**

Eyes normally distant on the occiput.

Last ventral segment with submarginal, elevated, serrate ridge; third joint of antennæ long.

Species very large (21.5 mm.); thorax with callosities, abruptly narrowed in front; elytral sculpture recalling *Chalcophora*. 41. **chalcophoroides.**

Species smaller (7-8 mm.); thorax without callosities feebly narrowed in front; elytral sculpture feeble.....42. **analis.**

Last ventral segment without submarginal serrate ridge.

Elytra with costæ more or less distinct; disc of thorax uneven, sides at base usually obliquely narrowing.

Third joint of the antennæ as long as or longer than the next three.

Color above dark bronze; tooth of anterior femur serrulate, the tibia ♂ arcuate and serrulate.....43. **sexsignata.**

Color violaceous or cupreous; tooth of anterior femur not serrulate, the tibia ♂ not serrulate.....44. **aznrea.**

Third joint of antennæ shorter than the next two; color dark bronze. 45. **æneola.**

Elytra without trace of costæ.

Thorax twice as wide as long.....46. **chrysocla.**

Thorax less than twice as wide as long.....47. **scitula.**

The species above enumerated belong to the Atlantic and central regions; none have as yet occurred on the Pacific slope.

40. **C. impressa** Fab.—Form rather broad, depressed, piceous, surface with faint bronze lustre, more evident on the thorax; antennæ piceous, three basal joints æneous, gradually more slender to the tip, the third joint as long as the next three; front rather flat in both sexes, more pubescent in the male, coarsely and densely punctured, a short sinuous carina above each antennal fovea, another more elevated at middle of front, above which in the female is a chevron; eyes very closely approximated on the occiput, especially in the males; clypeus (199) broadly triangularly emarginate at middle, oval each side; thorax more than twice as wide as long, subangulate at the sides, base slightly wider than apex, sides in front very oblique, then for a short distance less oblique, then arcuately narrowing to base; disc moderately convex, a vague median depression, another oblique, post-apical, three others vaguely impressed between the middle and side; surface coarsely punctured, punctures rather sparse at middle, more dense but not confluent at the sides; elytra very little wider than the thorax, nearly parallel, obliquely narrowed at apical third, the margin strongly serrate almost from the humeri, the apices obtuse; disc somewhat flattened, the basal fovea small but deep, the humeral depression well marked, first costa elevated from apex two-thirds to base, continued by a smooth line, the second costa faintly elevated, interrupted by the anterior fovea, continuing faintly to the basal fovea, third costa faint and short, the fourth elevated only near the apex, a faintly impressed densely punctured, obcordate fovea one-third from apex between the second and fourth costæ, another one-third from base, bilobed, interrupting the second costa;

surface moderately densely punctured, the punctures nearly equal, a little sparser and coarser in the scutellar region; body beneath dark bronze, sparsely punctate, the punctures of the abdomen coarser, the sides of the ventral segments with flat, smooth spaces, the hind angles of the segments slightly prominent; margin of last ventral segment entire, an elevated submarginal serrate ridge; prosternum not lobed in front; anterior femur with a moderately strong tooth, vaguely serrate on its distal edge. Length .48 - .56 inch; 12 - 14 mm. (Fig. 198.)

Male.--Prosternum very sparsely, finely punctate, transversely wrinkled in front; anterior tibia (202) suddenly flexed at middle, the apex not dilated; middle tibia strongly arcuate, the posterior straight; last ventral segment (200) deeply semi-circularly emarginate, the angles prominent; last dorsal coarsely punctate, truncate.

Female.—Prosternum as in the male; anterior and middle tibiæ slightly arcuate, the posterior straight; last ventral (201) arcuately truncate at apex, the angles prominent, a short carina at base with a depression each side; last dorsal coarsely punctate, the apex rounded.

The peculiarities of this species in form, the approximate eyes and the sculpture, are so well marked as to require no special mention.

This species occurs at Surinam, and is recorded from Santo Domingo. While mentioned by Chevrolat in his "Coléoptères de Cuba," (Ann. Fr. 1867, p. 586) it is not credited to that island. In the "Catalogus G. and H.," the species appears as a Colobogaster, while in the "Catalogus Buprestidarum," Saunders, 1871, the specific name *tranquebarica* is adopted.

The specimens before me were collected at Key West, Fla., by Morrison, and kindly given me by Mr. G. W. J. Angell, of New York.

41. **C. chalcophoroides** n. sp.—Form rather broad and robust, moderately convex, piceous, the surface with a silvery bronze lustre, except on the smooth spaces; antennæ gradually more slender to tip, piceous, the third joint as long as the next three; front ♀ rather flat, very coarsely cribrately punctured with callosities forming three irregular transverse bands; clypeus (204) broadly triangularly emarginate at middle, on each side arcuate; thorax twice as wide as long, widest a little behind the apex, the sides in front very abruptly wider, posteriorly straight and slightly convergent; disc at middle rather flat, with a median smooth space, on each side of which the punctures are close but not coarse, nearer the margin the punctures are very coarse and deep, with elevated tubercles of irregular form, a large callosity near the front, another opposite the middle of the base of the elytron; elytra wider than the thorax, humeri broadly rounded, the sides arcuately narrowing to apex, the sides feebly serrate near the tip, the apices slightly obliquely truncate; disc moderately convex, the first costa extending two-thirds to base and expanding in a broad smooth surface, second and third costæ replaced by large, irregular smooth spaces, the fourth costa slender but entire, the intervals very densely and rather finely punctulate; prosternum with a short, very broad lobe in front, the surface smooth at middle, coarsely punctate at the sides; metasternum coarsely not deeply cribrate; poste-

rior angles of the ventral segments prominent, the surface closely punctate, the punctures very elongate, the first ventral broadly sulcate at middle, the last ventral with entire margin; anterior femur with a moderately strong acute tooth, not serrate on its free edge. Length .86 inch; 22 mm. (Fig. 203.)

Male.—Unknown.

Female.—Anterior tibia (206) feebly arcuate, the middle and posterior straight; last ventral segment (205) sinuately truncate, the angles distinct, the surface smooth at middle, a distinctly elevated submarginal serrulate ridge.

The large size and robust form of this species are rather striking in its association with those forms in which the apices of the elytra are not spiniform. The sculpture is also peculiar and with the surface color resembles more closely our species of Chalcophora near *virginiensis*.

One specimen from Arizona given me by Mr. F. G. Schaupp without special designation of locality.

42. **C. analis** Lec.—Form moderately elongate, color greenish or dark bronze, moderately shining, beneath bronze, more or less green along the middle; antennæ cupreous, gradually more slender to tip, the third joint nearly as long as the next three; front slightly convex, cupreous, coarsely and closely punctured, an inverted chevron above more distinct in the female; clypeus (208) broadly triangularly emarginate, arcuate each side; thorax one-half wider than long, broader at base, the sides slightly sinuate and feebly narrowed both at apex and base; disc moderately convex, even, without grooves or depressions, the punctures moderately close and transversely confluent; elytra wider than the thorax, nearly parallel, narrowed at apical third, the margin serrate, the apices obtuse; disc moderately convex, the first costa faintly elevated at apical half, continued by a smooth line, the other costæ either abrupt or faintly indicated by smooth lines, the basal fovea moderately deep, another depression near the middle of each elytron, the surface coarsely not densely punctured at apical half, more densely and transversely subconfluent near the base; body beneath rather sparsely punctate; prosternum with a well marked lobe in front; anterior femur with a moderately strong tooth, serrate on its distal edge; last ventral segment with a submarginal serrate ridge, the outer margin entire. Length .28 - .32 inch; 7 - 8 mm. (Fig. 207.)

Male.—Prosternum coarsely not closely punctate; anterior tibia (211) slightly arcuate, with a very feeble dilatation at apex; middle and posterior tibiæ straight; last ventral segment (209) semi-circularly emarginate, with the angles acute and an ante-apical, transverse, serrate line; last dorsal sparsely punctate near the apex, the margin entire.

Female.—Prosternum as in the male; tibiæ straight; last ventral (208) emarginate, nearly as in the male, without distinct ante-apical, transverse, serrate line; last dorsal coarsely punctate, a slight depression at middle of apical margin.

Of all the species without special superficial characters this one is probably the easiest to recognize by its structural characters. There is but little variation, except in color. The sexual characters as

given by Dr. LeConte are, unfortunately, reversed, the dilatation of the anterior tibiæ indicating the male not having been observed.

Occurs in Texas near the Rio Grande, and at Matamoras, Mexico.

43. **C. sexsignata** Say.—Form and facies very like the small varieties of *femorata*, color piceous, with a faint bronze surface lustre, each elytron with three golden or brassy spots, one basal, two dorsal; body beneath bright green, the sides bright cupreous; antennæ green in both sexes, gradually more slender to the tip, the third joint as long as the next three; front flat, bright green ♂, cupreous ♀, coarsely not densely punctured, a chevron near the top, below it a transverse line thicker at middle; clypeus (213) triangularly emarginate, at middle arcuate on each side, resembling *femorata*; thorax twice as wide as long, abruptly narrowed in front, sides very slightly arcuate and gradually convergent posteriorly, the hind angles obtuse; disc moderately convex, a vague median depression posteriorly, a subapical, oblique impression, frequently an oblique depression from the anterior angles toward the scutellum; surface coarsely and densely punctured, more or less transversely strigose; elytra wider than the thorax, sides nearly parallel in front, very obliquely narrowed behind the middle, the margin serrulate, the apices obtuse; disc feebly convex, the first costa nearly entire, the others represented by faintly elevated smooth lines, a shallow fovea one-third from apex at the end of the third costa, another larger on the second costa in front of the middle, the basal fovea moderately deep, the humeral depression feeble, the surface coarsely, closely punctate; body beneath with moderate punctures, sparse at middle, rather dense at the sides of the abdomen, the ventral segments with feeble callosities, the hind angles not prominent; last ventral segment with entire margin; anterior femur with a moderate tooth, sinuate and serrate on its distal edge; prosternum not lobed in front. Length .26 - .50 inch; 6.5 - 12.5 mm. (Fig. 212.)

Male.—Prosternum flat, densely punctured, sparsely pubescent; anterior tibia (216) arcuate, not dilated at tip, serrulate within; middle tibia less arcuate and less serrulate; posterior tibia straight; last ventral (214) finely carinate at middle, semi-circularly emarginate at tip, the angles acute; last dorsal coarsely punctate, apex entire.

Female.—Prosternum a little more coarsely punctured; anterior tibia feebly arcuate, the middle and posterior straight; last ventral segment (215) strongly carinate at middle, the apex truncate, the angles slightly prominent.

This species represents in this series *femorata* in the other, many of its characters of form, sculpture and sexual modifications are similar, as will be seen on comparison.

Occurs from New York to Virginia, westward to Nebraska and Indian Territory.

44. **C. azurea** Lec.—Form rather broad, subdepressed, color variable from blue to greenish blue, violet or cupreous, beneath blue, the sides of the abdomen sometimes cupreous; antennæ greenish ♂ or bronze ♀, gradually more slender to the tip, the third joint nearly as long as the next three; front slightly convex, coarsely and rather closely punctured; clypeus (218) very broadly not deeply, triangularly emarginate at middle, on each side slightly arcuate; thorax nearly

twice as wide as long, widest slightly behind the middle, sides at apex and base narrowing, at middle slightly sinuate; disc moderately convex, without well marked depressions, except the usual post-apical, surface coarsely punctate, the punctures rather close at middle and sometimes transversely confluent, at sides much more dense; elytra wider than the thorax, gradually wider to two-thirds, then arcuately narrowing to apex, the margins serrate, the apices obtuse; disc feebly convex, a faint trace of the first costa and barely perceptible smooth lines indicating the others, the basal fovea small but distinct, two discal foveæ, one in front of middle, the other one-third from the apex, the foveæ often brighter blue or green; surface coarsely punctate, not closely in apical half, more densely near the base; body beneath more shining than above, usually blue, rarely green, these latter with the sides bright cupreous, as in *sexsignata*, the surface rather sparsely punctate; prosternum scarcely perceptibly lobed in front; anterior femur with a rather broad tooth, serrulate on its distal edge; last ventral segment with entire margin. Length .24 - .31 inch; 6 - 8 mm. (Fig. 217.)

Male.—Prosternum densely, coarsely punctured over its entire surface; anterior tibia (221) arcuate, thicker to tip, but not dilated at apex; middle tibia slightly arcuate, the posterior straight; last ventral segment (219) deeply, semicircularly emarginate, the angles acute, a slight carina at middle posteriorly.

Female.—Prosternum a little less densely punctured; anterior and middle tibiæ slightly arcuate, the posterior straight; last ventral (220) truncate, with the angles acute and prominent, slightly carinate, at middle posteriorly.

This species from its variable color might be confounded with *Harrisii* or *scitula*, but the structure of the antennæ will distinguish it from the first, and of the thorax from the second. In one specimen I have seen the suture of the elytra is greenish metallic.

Occurs in New York, Illinois, District of Columbia, Georgia and Texas.

45. **C. senecola** Lec.—Form rather broad, subdepressed, nearly as in *pusilla*, dark bronze, subopaque; front slightly convex in both sexes, coarsely punctured, a little more closely in the male, the female with two faint chevrons, dark bronze ♀, slightly greenish ♂; antennæ rather broad, gradually more slender to the tip, the third joint not as long as the next two; clypeus (223) acutely emarginate at middle arcuate each side, closely resembling *femorata*; thorax a little more than twice as wide as long, narrowed in front, sinuate at the middle of the sides, incurved posteriorly; disc feebly convex, a vague median sulcus, a deeper depression near the sides; surface moderately and coarsely punctate, slightly transversely confluent in the female; elytra scarcely wider than the thorax, parallel, narrowed at apical third, the margin feebly serrulate, the apices obtuse; disc subdepressed, basal fovea moderate, a longer humeral depression, first costa slightly elevated from apex one-third to base and continued slightly by a smooth line, the other costa faintly indicated by short lines; surface moderately, densely, equally punctured without distinct foveæ; body beneath much more shining than above, the punctures of the abdomen rather sparse and indistinct; last ventral segment with entire margin; prosternum not lobed in front; anterior femur with a moderate tooth not serrulate on its margin. Length .27 inch; 7 mm. (Fig. 222.)

Male.—Prosternum densely, coarsely punctured and slightly pubescent between the coxæ, more sparsely punctured in front; anterior tibiæ (226) arcuate and with a dilatation at apical third; middle tibiæ straight, slightly thickened at tip, posterior tibia straight; last ventral segment (224) with a shallow, semi-circular emargination, the last dorsal sparsely punctate, vaguely emarginate at tip.

Female.—Prosternum coarsely, sparsely punctate; anterior tibia slightly arcuate, the middle and posterior straight; last ventral segment (225) very slightly notched at tip, longer than in the male, the sides slightly sinuate; last dorsal sparsely punctate, entire.

This species is very inconspicuous and might readily be mistaken for *pusilla*. In the typical specimens the elytra show no traces of more densely punctured foveæ, although there are slight depressions where they should be, but in some specimens I have examined the foveæ are nearly as plain as in *pusilla*, thereby increasing the resemblance, at the same time the elytral punctuation is coarser.

Occurs in Kansas, Nebraska, Nevada, Texas and Arizona.

46. **C. chrysoela** Illig.—Form moderately broad, not depressed, color purplish black, or faintly cupreous; elytra with golden to greenish spots, usually four on each side, the posterior two often transversely confluent; body beneath dark bronze; antennæ gradually more slender to tip, cupreous in both sexes, the third joint a little longer than the next two; front slightly convex, coarsely punctured, an arcuate carina above joining the occipital carina, greenish ♂ or bronze ♀; clypeus (228) triangularly emarginate at middle, arcuate each side; thorax twice as wide as long, anterior angles obliquely truncate, the sides slightly sinuous; disc moderately convex, without depressions, punctuation coarse, sparser at middle, dense near the sides; elytra wider than the thorax, slightly broader behind the middle, arcuately narrowing at apical third, the margin serrulate, the apices obtuse; disc moderately convex, without trace of costæ, basal fovea moderately deep, golden or green, this color often reaching the humeri, a distinctly impressed fovea near the middle of each elytron and a spot opposite on the lateral margin, these often united, one-third from apex two spots, these often transversely confluent; surface coarsely but not closely punctate; body beneath with very large punctures, the ventral segments without callosities, the margin of the last ventral entire; prosternum faintly lobed in front; anterior femur with a moderate, acute tooth, not serrulate. Length .28 - .32 inch; 7 - 8 mm. (Fig. 227.)

Male.—Prosternum very coarsely punctate, a narrow elevated median line; anterior tibia (231) arcuate, a very slight dilatation near the tip; middle tibia slightly arcuate, the posterior straight; last ventral segment (229) with a broad, but shallow, arcuate emargination, the angles distinct; last dorsal coarsely punctured, the apex entire.

Female.—Prosternum as in the male; anterior and middle tibiæ slightly arcuate, posterior straight; last ventral (230) sinuately truncate, the angles acute, a subapical serrulate ridge; last dorsal as in the male.

This species and *scitula* are closely related, more so in description than in facies. The present species has a broader thorax, and is in fact broader generally, the punctuation is less coarse and the elytral spots of different appearance and form.

This species seems strictly southern in its distribution, occurring from Virginia to Florida and Texas.

47. **C. scitula** Gory.—Form rather elongate, moderately convex, color deep violet, or dark cupreous, the thorax often more decidedly blue, each elytron with three more brilliant spots, blue or green, and of variable distinctness and extent; antennæ gradually more slender to tip, piceous, three basal joints greenish ♂ or cupreous ♀, third joint nearly as long as the next three; front slightly convex, green ♂, violaceous ♀, coarsely and deeply punctured, an arcuate line, the concavity upward, above which is a slight depression in both sexes; clypeus (233) with a small triangular emargination at middle, subtruncate each side; thorax one and a half times as wide as long, the sides straight, very slightly convergent posteriorly, rounded near the front angles, the hind angles distinct and sometimes slightly everted; disc convex, without depressions or callosities, surface coarsely punctured, sparsely at middle, more densely near the sides, sometimes slightly transversely strigose; elytra wider than the thorax, humeri rounded, sides slightly wider behind the middle, arcuately narrowed at apical third, the margin finely serrate, the apices obtuse; disc convex, the punctuation coarse, deep, but not dense, there is no trace of costæ and the foveæ are scarcely impressed, the basal even rather shallow, the colored spots are placed in the usual position of the foveæ of the other species; body beneath violet-blue, punctuation coarse, but sparse, the ventral segments without umbones, their angles not prominent; prosternum distinctly lobed in front; anterior femur with rather strong tooth, obsoletely serrate or simple; last ventral with entire margin. Length .22 - .28 inch; 5.5 - 7 mm. (Fig. 232.)

Male.—Prosternum flat, densely punctured, not pubescent; anterior tibia (236) arcuate, a slight dilatation near the tip; middle tibia feebly arcuate, the posterior straight; last ventral (234) with a very shallow, broad emargination; last dorsal very coarsely punctured, entire at apex.

Female.—Prosternum as in the male; anterior tibia slightly arcuate, the middle and posterior straight; last ventral (235) sinuately truncate, the angles prominent; last dorsal coarsely punctured, entire.

This species appears in the monograph of Laporte and Gory as *ultramarina* Say. Dr. LeConte recognizing the erroneous determination proposed the name *azurea* for it (Proc. Acad. 1857, p. 8), and in his "Revision of the Buprestidæ" (Trans. Am. Philos. Soc. xi, 1859, p. 238) the name *concinnula* Lec. is substituted and *azurea* used for another species. Later, in the "Check List," Crotch used the name *chlorocephala*. During his visit to Europe Dr. LeConte examined many of the types of Gory and Laporte in the possession of Count Mniszech, and obtained a specimen of *scitula*, which proves to be merely a more brilliantly colored variety of *ultramarina* ‡ G. and L., and *concinnula* Lec. I have for these reasons adopted the name *scitula* as the prior name.

The more brightly colored specimens resemble both *azurea* and somewhat *Harrisii*, but the form of the thorax is quite characteristic,

and the strong rather distant punctuation of the elytra is almost peculiar to the present species.

Occurs in the Middle States region, New Jersey, Pennsylvania, Ohio and District of Columbia.

Group VIII.

Three species are separated below as a group, the essential characters being:—last ventral segment with the margin entire, not serrulate; elytra with the apices separately rounded, the disc without trace of either costa or fovea.

The following table will distinguish the species:

Species of rather large size, robust, apex of abdomen exposed beyond the elytra, punctuation of surface rather coarse, elytra with three interrupted purple-black fasciæ.
Sides of thorax regularly arcuate.....48. **atrifasciata.**
Sides of thorax oblique in front, arcuate posteriorly.....49. **Ulkei.**
Species rather small and slender, the punctuation sparse and fine; elytra covering the abdomen, color bright green, without fasciæ.
Sides of thorax very feebly arcuate.....50. **prasina.**

The male is known of the first species only, in it the antennæ are bipectinate, the terminal joint itself being bifurcate. In the female the lower edge of the antennæ is broad, so that in section the antennal joints are an equilateral triangle. In the other two species, of which only females are known; the antennæ present the usual flattened form, and it is probable that those of the male do not differ in structure from the normal type.

The three species are western, *atrifasciata* occurring in New Mexico and Arizona, *Ulkei* in Texas and *prasina* in the north of California.

48. **C. atrifasciata** Lec.—Form robust, slightly depressed, cylindrical, bright green or blue, varying to golden or cupreous; elytra with three interrupted fasciæ of black or purple color; antennæ variable in form in the two sexes, dark bronze, third joint very nearly as long as the next three; front convex, not differing in color in the two sexes, coarsely and deeply punctured and with an arcuate, transverse, elevated line above, beneath which is a zigzag line in form of W; clypeus (239) very broadly not deeply emarginate; thorax more than twice as wide as long, slightly broader at base than apex, the sides regularly arcuate; disc convex, a smoother median line posteriorly; punctures near the middle very coarse and deep, at the sides more dense; elytra scarcely wider than the thorax, parallel, narrowed at apical third, the apices separately rounded and not covering entirely the abdomen, the margins feebly serrulate; disc convex, without trace of costæ, basal fovea moderately deep; surface less coarsely punctured than the thorax and not densely, those nearer the base rather coarser; body beneath coarsely, not densely punctured, the ventral segments without

lateral umbone, the angles rather prominent, the last segment with entire margin; prosternum not lobed in front; anterior femur with an acute, not serrulate tooth. Length .44 - .58 inch; 11 - 14.5 mm. (Fig. 238.)

Male.—Antennæ bipectinate (238) from the fourth joint, the posterior or inferior branch a little longer, terminal joint bifurcate; prosternum convex, coarsely sparsely punctured; anterior tibia (242) slightly arcuate, very vaguely sinuate on its inner edge; middle tibia slightly arcuate, the posterior straight; last ventral segment (240) very vaguely emarginate at middle truncate each side; last dorsal short, coarsely punctate and entire.

Female.—Antennæ simply serrate, the lower edge, however, broader than usual; prosternum as in the male; anterior tibia scarcely arcuate, the middle and posterior straight; last ventral segment (241) sinuately truncate; last dorsal coarsely punctate, entire.

The dark markings on the elytra seem quite constant, and are in a general way as represented in the figure. The color of the body beneath is as above. The male antennæ present an unique structure in the genus.

Five specimens have been examined, one only a male. It occurs in Arizona and New Mexico.

49. **C. Ulkei** Lec.—Form of *atrifasciata*, deep blue, the elytra with darker spaces as in that species; thorax more than twice as wide as long, widest behind the middle, the sides in front rather oblique, posteriorly strongly arcuate. Length .60 inch; 15 mm. (Fig. 243.)

This species is so closely related to the preceding that a few words of description with some comparative remarks are all that seem necessary. The foveæ of the head, of which Dr. LeConte speaks, are merely the spaces above and below the W-like line, which is less elevated than in *atrifasciata*. The thorax is otherwise formed as shown in the outline, although this is really less of a variation than may be observed in such species as *femorata*. The sculpture of the surface is less marked and the punctures less dense, while those of the elytra are rather finer and closer than in *atrifasciata*.

The only specimen I have seen is the type kindly loaned me by Mr. Ulke. It is a female, and the ventral segments are as in *atrifasciata*. The antennæ, however, present the usual form observed in the genus, the free angles being truncate and not at all acute, while the lower edge is no broader than normal. The antennal structure alone induces me to retain the species as distinct, otherwise I should have considered it an unusually stout female of *atrifasciata*, as indeed it may ultimately prove to be.

One specimen, Texas.

50. **C. prasina** n. sp.—Form moderately elongate, color above bright green, beneath dark violet; surface moderately shining, glabrous; antennæ ♀ piceous, gradually more slender to tip, third joint as long as the next two: front moderately convex, coarsely not deeply punctured, occiput without carina; clypeus (245) very broadly, not deeply emarginate, arcuate each side; thorax posteriorly very nearly twice as wide as long, sides very feebly arcuate, gradually divergent from the front angles, slightly arcuate posteriorly, disc convex; surface even without foveæ or callosities, punctuation rather sparse, a little coarse toward the sides; elytra very little wider than the thorax, parallel, arcuately narrowed at apical third, the margin serrate, the apices separately rounded; disc regularly convex, without costæ or foveæ, the basal fovea very feeble; surface finely, indistinctly and sparsely punctate; body beneath dark violet, the punctuation coarse, feebly impressed and not dense, the flanks of the prothorax almost smooth, ventral segments without callosities, the margin of the last ventral entire; prosternum coarsely not densely punctured, feebly lobed in front; anterior femur with a short broad tooth, serrulate on its distal edge. Length .26 inch; 6.5 mm. (Fig. 244.)

Male.—Unknown.

Female.—Anterior and middle tibiæ (247) slightly arcuate, the posterior straight; last ventral segment (246) with the apex rounded, entire, an ante-apical serrate ridge, the terminal teeth on each side prominent; last dorsal coarsely punctured, entire.

A pretty little species readily known by its structural characters and color. The contrast between the color of the upper and lower surfaces is greater than I have observed in any other species.

One specimen from California, probably the northern regions.

Additional Notes.

C. CALIFORNICA *Motsch.* quoted by Saunders (Catal. Bupr. p. 97) as a synonym of *californica* Lec., was described as Belionota, and is really *Actenodes acornis* Say.

C. ERRANS *Gory*, quoted from N. A., is probably from S. A. See Lec., Proc. Acad. 1873, p. 331.

C. FASTIDIOSA *Gory*, described from Brazil, is said by Dr. LeConte to be a variety of *femorata*, Proc. Acad. 1873, p. 332.

C. FRONTALIS *Oliv.*, formerly in our lists, is from Brazil.

C. GERMARI *Lap. et Gory*, heretofore quoted as a synonym of *sexsignata* Say, is a synonym of *Solieri*. See Lec. Proc. Acad. 1873, p. 332.

C. THORACICA *Fab.*, is from the island of St. Thomas.

In the bibliography, references and synonyms not pertinent to our fauna have been omitted.

Bibliography and Synonymy.

CHRYSOBOTHRIS.

Esch. Zool. Atlas, I, p. 9.

Colobogaster Solier, Ann. Fr. 1833, p. 308.

Orlontomus Kirby, Fauna Bor. Am. p. 156.

C. Atabalipa Lap. et Gory, Mon. ii, Chrys. p. 43, pl. viii, fig. 60.

basalis Lec., Proc. Acad. 1858, p. 68; Revis. Bup. Trans. Amer. Philos. Soc. 1859, p. 230.

C. octocola Lec., Proc. Acad. 1858, p. 67; Revis. p. 230.

C Edwardsii n. sp.

C. debilis Lec., Revis. p. 236.

disjuncta Lec., Revis. p. 236.

C. axillaris n. sp.

C. purpureovittata n. sp.

C. femorata Oliv., Ent. ii, 32, p. 47, pl. xi, fig. 121; Fab., Syst. El. ii, p. 208; Lec., Revis. p. 231.

insculpta Hbst., Käfer, ix, p. 145, pl. 146, fig. 10.

quadri-impressa Lap. et Gory, loc. cit. p. 48, pl. ix, fig. 64.

Lesueuri Lap. et Gory, loc. cit. p. 49, pl. ix, fig. 66.

dentipes ‡ Lap. et Gory, loc. cit. p. 52, pl. ix, fig. 70.

nigritula Lap. et Gory, loc. cit. p. 54, pl. x, fig. 73.

cribraria Mann., Bull. Mosc. 1837, p. 77.

dissimilis Gory, Mon. Suppl. p. 181, pl. xxxi, fig. 177.

alabamae Gory, loc. cit. p. 185, pl. xxxi, fig. 183.

viridiceps, rugosiceps Mels., Proc. Acad. ii, p. 147.

soror ‖ Lec., Revis. p. 232.

obscura Lec., Revis. p. 232.

misella Lec., Revis. p. 233.

adelpha Gemm. et Har., Catalogus, p. 1423 (for *soror*).

C. contigua Lec., Revis. p. 255.

semisculpta ♀ Lec., Revis. p. 254.

purpurifrons Mots., Bull. Mosc. 1859, iii, p. 183.

C. cuprascens Lec., Revis. p. 234.

C. floricola Gory, Mon. Suppl. p. 179, pl. xxv, fig. 175.

femorata ‡ Lap. et Gory, loc. cit. p. 48, pl. ix, fig. 65.

calcarata Mels., Proc. Acad. ii, p. 144; Lec., Revis. p. 234.

C. ignicollis Horn, Trans. Am. Ent. Soc. xii, 1885, p. 145.

C. speculifer n. sp.

C. viridicyanea n. sp.

C. Harrisii Hentz, Journ. Acad. v, p. 373, pl. xiii, fig. 1; Lec., Revis. p. 239.

chlorocephala Gory, loc. cit. p. 161, pl. xxvii, fig. 156.

C. dolata n. sp.

C. dentipes Germ., Ins. Spec. Nov. p. 38; Lec., Revis. p. 235.

characteristica Harris, N. E. Farmer, 1829, p. 8.

planata Lap. et Gory, loc. cit. p. 56, pl. x, fig. 77.

posticalis Lap. et Gory, loc. cit. p. 56, pl. x, fig. 76.

C. ludificata n. sp.

C. scabripennis Lap. et Gory, loc. cit. p. 53, pl. ix, fig. 71; Lec., Revis. p. 235.

proxima Kby., Fauna Bor. Am. p. 157.

scabra Gory, Mon. Suppl. p. 182, pl. xxxi, fig. 178.

C. trinervia Kby., loc. cit. p. 157, pl. ii, fig. 159; Lec. Revis. p. 235.

cicatricosa Mots., Etudes 1852, pl. 77.

C. carinipennis Lec., Bull. U. S. Geol. Surv. 1878, iv, p. 459.

C. caurina n. sp.

C. californica Lec., Revis. p. 255.

vulcanica Lec., Proc. Acad. 1861, p. 346.

C. Blanchardi n. sp.

C. quadrilineata Lec., Revis. p. 233.

C. exesa Lec., Proc. Acad. 1858, p. 68; Revis. p. 231.

C. texana Lec., Revis. p. 234.

C. mali n. sp.

C. pusilla Lap. et Gory, loc. cit. p. 53, pl. x, fig. 72 (*biguttata* on plate): Lec., Revis. p. 236.

striangulata Mels., Proc. Acad. ii, p. 147.

C. nixa n. sp.

C. deleta Lec., Revis. p. 255.

subcylindrica Mots., Bull. Mosc. 1859, iii, p. 182, pl. iv, fig. 17.

C. deserta n. sp.

C. lixa n. sp.

C. cyanella n. sp.

C. humilis n. sp.

C. ærea Chev., Col. Mex. fasic. iii; Lap. et Gory, loc. cit. p. 42, pl. viii, fig. 59.

C. gemmata Lec., Proc. Acad. 1858, p. 67; Revis. p. 237.

C. Merkelii n. sp.

C. acutipennis Chev., Col. Mex. ii, p. 190.

acuminata Lec., Revis. p. 237.

C. libonoti n. sp.

C impressa Fab., Mant. Ins. i, p. 182; Chev., Ann. Fr. 1867, p. 586.*

C. chalcophoroides n. sp.

C. analis Lec., Revis. p. 238.

C. sexsignata Say, Trans. Amer. Philos. Soc. vi, p. 158; Lec., Revis. p. 237.

sexguttata ‖ Say, Journ. Acad. iii, p. 161.

ignipes Lap. et Gory, loc. cit. p. 50, pl. ix, fig. 68.

C. azurea Lec., Revis. p. 239.

C. aneola Lec., Revis. p. 239.

purpurata Bland, Proc. Ent. Soc. Phil. iii, p. 166.

C. chryscela Illig. Wiedm. Arch. i, p. 122.

hybernata Fab., Syst. El. ii, p. 309; Lap. et Gory, loc. cit. p. 16, pl. iv, fig. 24; Lec., Revis. p. 238.

viridipunctata Lap. et Gory, loc. cit. p. 21, pl. iv, fig. 31.

C. scitula Gory, Mon. Suppl. p. 169, pl. xxvii, fig. 155.

ultramarina ‡ Lap. et Gory, loc. cit. p. 13, pl. iii, fig. 19.

azurea Lec., Proc. Acad. 1857, p. 8.

concinnula Lec., Revis. p. 238.

chlorocephala ‡ Crotch, Check List, p. 64.

C. atrifasciata Lec., Proc. Acad. 1873, p. 332.

nigrofasciata ‡ Lec., Revis. p. 240.

C. Ulkei Lec., Revis. p. 240.

C. prasina n. sp.

---

* The name *impressa* has been used, although it was preoccupied by Fabricius himself. Later Gmelin changed the name to *tranquebarica*, and two years after Olivier proposed *excavata*. In accordance with the strictest rules the name proposed by Gmelin should be adopted, although it conveys an erroneous idea of habitat. Inasmuch as the first *impressa* proposed by Fabricius is now placed in Halecia, it might be as well to allow the Chrysobothris to retain the name proposed for it. It is better, at times, to violate the law of priority than perpetuate an annoyance.

PLATE II.

Fig. 1. **C. atabalipa.**
Fig. 2. idem front.
Fig. 3. idem ♂ last ventral segment.
Fig. 4. idem ♀ last ventral segment.
Fig. 5. idem anterior leg ♂.
Fig. 6. **C. octocola.**
Fig. 7. idem front.
Fig. 8. idem ♂ last ventral segment.
Fig. 9. idem ♀ last ventral segment.
Fig. 10. idem anterior leg ♂.
Fig. 11. **C. Edwardsii.**
Fig. 12. idem front.
Fig. 13. idem ♀ last ventral segment.
Fig. 14. idem anterior femur ♀.
Fig. 15. **C. debilis.**
Fig. 16. idem front.
Fig. 17. idem ♂ last ventral segment.
Fig. 18. idem ♀ last ventral segment.
Fig. 19. idem anterior leg ♂.
Fig. 20. **C. axillaris.**
Fig. 21. idem front.
Fig. 22. idem prothorax beneath.
Fig. 23. idem ♀ last ventral segment.
Fig. 24. idem anterior femur ♀.
Fig. 25. **C. purpureovittata.**
Fig. 26. idem front.
Fig. 27. idem ♂ last ventral segment.
Fig. 28. idem ♀ last ventral segment.
Fig. 29. idem anterior leg ♂.
Fig. 30. **C. femorata** var. *Leseuri.*
Fig. 31. idem front.
Fig. 32. idem ♂ last ventral segment.
Fig. 33. idem ♂ last ventral segment.
Fig. 34. idem anterior leg ♂.
Fig. 35. **C. contigua.**
Fig. 36. idem front.
Fig. 37. idem ♂ last ventral segment.
Fig. 38. idem ♀ last ventral segment.
Fig. 39. idem anterior leg ♂.
Fig. 40. **C cuprascens.**
Fig. 41. idem front.
Fig. 42. idem ♂ last ventral segment.
Fig. 43. idem ♀ last ventral segment.
Fig. 44. idem anterior leg ♂.
Fig. 45. **C. floricola.**
Fig. 46. idem front.
Fig. 47. idem ♂ last ventral segment.
Fig. 48. idem ♀ last ventral segment.
Fig. 49. idem anterior leg ♂.
Fig. 50. idem middle leg ♂.

PLATE III.

Fig. 51. **C. ignicollis.**
Fig. 52. idem front.
Fig. 53. idem ♂ last ventral segment.
Fig. 54. idem ♀ last ventral segment.
Fig. 55. idem anterior leg ♂.
Fig. 56. **C. speculifer.**
Fig. 57. idem front.
Fig. 58. idem ♂ last ventral segment.
Fig. 59. idem ♀ last ventral segment.
Fig. 60. idem anterior leg ♂.
Fig. 61. **C. viridicyanea.**
Fig. 62. idem front.
Fig. 63. idem ♂ last ventral segment.
Fig. 64. idem ♀ last ventral segment.
Fig. 65. idem anterior leg ♂.
Fig. 66. **C. Harrisii.**
Fig. 67. idem front.
Fig. 68. idem ♂ last ventral segment.
Fig. 69. idem ♀ last ventral segment.
Fig. 70. idem anterior leg ♂.
Fig. 71. **C. dolata.**
Fig. 72. idem front.
Fig. 73. idem ♀ last ventral segment.
Fig. 74. idem anterior femur ♀.
Fig. 75. **C. dentipes.**
Fig. 76. idem front.
Fig. 77. idem ♂ last ventral segment.
Fig. 78. idem ♀ last ventral segment.
Fig. 79. idem anterior leg ♂.
Fig. 80. **C. ludificata.**
Fig. 81. idem front.
Fig. 82. idem ♂ last ventral segment.
Fig. 83. idem ♀ last ventral segment.
Fig. 84. idem anterior leg ♂.
Fig. 85. **C. scabripennis.**
Fig. 86. idem front.
Fig. 87. idem ♂ last ventral segment.
Fig. 88. idem ♀ last ventral segment.
Fig. 89. idem anterior leg ♂.

PLATE IV.

Fig. 90. **C. trinervia** (N. Hampshire).
Fig. 91. idem front.
Fig. 92. idem ♂ last ventral segment.
Fig. 93. idem ♀ last ventral segment.
Fig. 94. idem anterior leg ♂.
Fig. 95. **C. trinervia** (N. Carolina).
Fig. 96. antenna of *C. ludificata*.
Fig. 97. antenna of *C. gemmata*.
Fig. 98. prothorax beneath of *dentipes*, etc.
Fig. 99. prothorax beneath of *californica*, etc.
Fig. 100. **C. carinipennis.**
Fig. 101. idem front.
Fig. 102. idem ♂ last ventral segment.
Fig. 103. idem ♀ last ventral segment.
Fig. 104. idem anterior leg ♂.
Fig. 105. **C. caurina.**
Fig. 106. idem front.
Fig. 107. idem ♂ last ventral segment.
Fig. 108. idem ♀ last ventral segment.
Fig. 109. idem anterior leg ♂.
Fig. 110. **C. californica.**
Fig. 111. idem front.
Fig. 112. idem ♂ last ventral segment.
Fig. 113. idem ♀ last ventral segment.
Fig. 114. idem anterior leg ♂.
Fig. 115. **C. Blanchardii.**
Fig. 116. idem front.
Fig. 117. idem ♂ last ventral segment.
Fig. 118. idem ♀ last ventral segment.
Fig. 119. idem anterior leg ♂.
Fig. 120. **C. quadrilineata.**
Fig. 121. idem front.
Fig. 122. idem ♂ last ventral segment.
Fig. 123. idem ♀ last ventral segment.
Fig. 124. idem anterior leg ♂.
Fig. 125. **C. exesa.**
Fig. 126. idem front.
Fig. 127. idem ♂ last ventral segment.
Fig. 128. idem ♀ last ventral segment.
Fig. 129. idem anterior leg ♂.

PLATE V.

Fig. 130. **C. texana.**
Fig. 131. idem front.
Fig. 132. idem ♂ last ventral segment.
Fig. 133. idem ♀ last ventral segment.
Fig. 134. idem anterior leg ♂.
Fig. 135. **C. mali.**
Fig. 136. idem front.
Fig. 137. idem ♂ last ventral segment.
Fig. 138. idem ♀ last ventral segment.
Fig. 139. idem anterior leg ♂.
Fig. 140. **C. pusilla.**
Fig. 141. idem front.
Fig. 142. idem ♂ last ventral segment.
Fig. 143. idem ♀ last ventral segment.
Fig. 144. idem anterior leg ♂.
Fig. 145. **C. nixa.**
Fig. 146. idem front.
Fig. 147. idem ♂ last ventral segment.
Fig. 148. idem ♀ last ventral segment.
Fig. 149. idem anterior leg ♂.
Fig. 150. **C. deleta.**
Fig. 151. idem front.
Fig. 152. idem ♂ last ventral segment.
Fig. 153. idem ♀ last ventral segment.
Fig. 154. idem anterior leg ♂.
Fig. 155. **C. deserta.**
Fig. 156. idem front.
Fig. 157. idem ♂ last ventral segment.
Fig. 158. idem anterior leg ♂.
Fig. 159. **C. lixa.**
Fig. 160. idem front.
Fig. 161. idem ♂ last ventral segment.
Fig. 162. idem ♀ last ventral segment.
Fig. 163. idem anterior leg ♂.
Fig. 164. **C. cyanella.**
Fig. 165. idem front.
Fig. 166. idem ♂ last ventral segment.
Fig. 167. idem ♀ last ventral segment.
Fig. 168. idem anterior leg ♂.

PLATE VI.

Fig. 169. **C. humilis.**
Fig. 170. idem front.
Fig. 171. idem ♀ last ventral segment.
Fig. 172. idem anterior femur ♀.
Fig. 173. **C.ærea.**
Fig. 174. idem front.
Fig. 175. idem ♂ last ventral segment.
Fig. 176. idem ♀ last ventral segment.
Fig. 177. idem anterior leg ♂.
Fig. 178. **C. gemmata.**
Fig. 179. idem front.
Fig. 180. idem ♂ last ventral segment.
Fig. 181. idem ♀ last ventral segment.
Fig. 182. idem anterior leg ♂.
Fig. 183. **C. Merkelii.**
Fig. 184. idem front.
Fig. 185. idem ♂ last ventral segment.
Fig. 186. idem ♀ last ventral segment.
Fig. 187. idem anterior leg ♂.
Fig. 188. **C. scutipennis.**
Fig. 189. idem front.
Fig. 190. idem ♂ last ventral segment.
Fig. 191. idem ♀ last ventral segment.
Fig. 192. idem anterior leg ♂.
Fig. 193. **C. libonoti.**
Fig. 194. idem front.
Fig. 195. idem ♂ last ventral segment.
Fig. 196. idem ♀ last ventral segment.
Fig. 197. idem anterior leg ♂.
Fig. 198. **C. impressa.**
Fig. 199. idem front.
Fig. 200. idem ♂ last ventral segment.
Fig. 201. idem ♀ last ventral segment.
Fig. 202. idem anterior leg ♂.
Fig. 203. **C. chalcophoroides.**
Fig. 204. idem front.
Fig. 205. idem ♀ last ventral segment.
Fig. 206. idem anterior leg ♂.

PLATE VII.

Fig. 207. **C. analis.**
Fig. 208. idem front.
Fig. 209. idem ♂ last ventral segment.
Fig. 210. idem ♀ last ventral segment.
Fig. 211. idem anterior leg ♂.
Fig. 212. **C. sexsignata.**
Fig. 213. idem front.
Fig. 214. idem ♂ last ventral segment.
Fig. 215. idem ♀ last ventral segment.
Fig. 216. idem anterior leg ♂.
Fig. 217. **C. azurea.**
Fig. 218. idem front.
Fig. 219. idem ♂ last ventral segment.
Fig. 220. idem ♀ last ventral segment.
Fig. 221. idem anterior leg ♂.
Fig. 222. **C. sneela.**
Fig. 223. idem front.
Fig. 224. idem ♂ last ventral segment.
Fig. 225. idem ♀ last ventral segment.
Fig. 226. idem anterior leg ♂.
Fig. 227. **C. chrysoela.**
Fig. 228. idem front.
Fig. 229. idem ♂ last ventral segment.
Fig. 230. idem ♀ last ventral segment.
Fig. 231. idem anterior leg ♂.
Fig. 232. **C. scitula.**
Fig. 233. idem front.
Fig. 234. idem ♂ last ventral segment.
Fig. 235. idem ♀ last ventral segment.
Fig. 236. idem anterior leg ♂.
Fig. 237. C. atrifasciata.
Fig. 238. idem antenna ♂; T, terminal joint; A, P, the anterior and posterior branches of joints 4 – 10.
Fig. 239. idem front.
Fig. 240. idem ♂ last ventral segment.
Fig. 241. idem ♀ last ventral segment.
Fig. 242. idem anterior leg ♂.
Fig. 243. **C. Ulkei, outline of thorax.**
Fig. 244. **C. prasina.**
Fig. 245. idem front.
Fig. 246. idem ♀ last ventral segment.
Fig. 247. idem front femur ♀.

Studies on the North American CHALCIDIDÆ, with descriptions of new species from Florida.

BY WILLIAM H. ASHMEAD.

Jacksonville, Florida.

(Paper No. 7.)

Subfamily—LEUCOSPINÆ.

LEUCOSPIS Fabr.

1. **Leucospis affinis** Say, var. *floridana* Cresson.

One specimen of this variety was identified from South Florida, it measured nearly half an inch in length.

The species is very rare in Florida.

Subfamily—CHALCIDINÆ.

SMICRA Spinola.

2. **Smicra pulchra** Cresson.

This species was originally described by Mr. E. T. Cresson from specimens from Mexico and Cuba.

I took and identified three specimens here last summer.

3. **Smicra bioculata** Cresson.

Originally described from Texas. I took two specimens in Florida last summer.

4. **Smicra flavopicta** Cresson.

I took two specimens of this species last autumn; it was originally described from Cuba.

5. **Smicra torvina** Cresson.

Two specimens of this species were bred from larvæ feeding on oak leaves, with about fifty specimens of an undetermined ichneumon.

The chalcids made their appearance long after the ichneumons, and they may be secondary parasites on it.

Subfamily—PERILAMPINÆ.

PERILAMPIS Latreille.

6. **Perilampis cyaneus** Brullé.
7. **Perilampis hyalinus** Say.
8. **Perilampis triangularis** Say.

I have taken here and identified specimens of all three of the above species.

In studying the genus I notice the following synonyms:

Perilampis *alexis* Walker = P. hyalinus *Say.*
" *entellus* Walker = P. platygaster *Say.*
" *lepreos* Walker = P. triangularis *Say.*

The following species is undescribed:

9. **Perilampis fulvicornis** n. sp.

♂.—Length .08 inch. Head and thorax brown-black with a slight metallic lustre; head at base metallic green and transversely wrinkled; face smooth impunctured, pubescent; ocelli dark; eyes brown; antennæ, scape more or less metallic green and grooved beneath; thorax coarsely, deeply punctate; scutellum long, highly elevated posteriorly with the tip obtusely rounded; abdomen blue-black, triangular, smooth and shining; coxæ and femora blue-black; tibiæ and tarsi clear yellow; wings hyaline, veins pale or slightly yellowish.

Described from one specimen captured at large.

This species approaches nearest to *P. hyalinus* Say, but is at once distinguished from it by its smaller size, more slender form and by the yellow tibiæ and tarsi.

Subfamily—EURYTOMINÆ.

DECATOMA Spinola.

10. **Decatoma maculipes** n. sp.

♀.—Length .11 inch. Black, coarsely punctate and covered with short, white pubescence; antennæ black, with a dull yellow scape; legs: coxæ and femora black, except at tips; tips with tibiæ dull yellow, tibiæ with a black blotch in the middle, tarsi pale; wings hyaline, veins pale yellowish.

Described from one specimen bred April, 1885, from oak gall *Dryorhizoxenus floridanus* Ashm.

It is closely related to *Decatoma hyalipennis* Walsh, but the yellow legs and collar in that species readily distinguish it.

SYSTOLE Walker.

11. **Systole brachyptera** n. sp.

♀.—Length .12 inch. Slender, black, with the surface finely shagreened, pubescent; head more coarsely shagreened than the thorax, viewed from front

triangular with mouth parts dull yellow; eyes greenish; antennæ 9-jointed, black, or piceo-black, the apex of pedicel and first flagellar joint yellow, the mesonotum is twice as long as wide and transversely shagreened at base; scutellum coarsely but shallowly punctate; legs piceous with coxæ, knees and tips of tibiæ and tarsi dull yellow; abdomen very long, pointed fusiform, the fourth segment is unusually long, occupying considerably more than a third of the whole surface, anus and tip of venter yellow; wings hyaline, short and broadly rounded, veins yellowish, submarginal vein about twice as long as marginal and post-marginal veins combined post-marginal slightly shorter than marginal; stigmal vein clavate.

This interesting species is described from one specimen taken at large last summer. It is the first species of the genus described in our fauna.

ISOSOMA Walker.

12. **Isosoma gigantea** n. sp.

♂.—Length .15 inch. Black, punctate; head wider than thorax; antennæ 9-jointed, brown, pedicel short, flagellar joints long, cylindrical, pubescent, pubescence in whorls, first joint of flagellum longest and thickest, about five times as long as thick, other joints about four times as long as thick; abdomen black, shining, petiole stout, as long as the posterior coxæ; legs a uniform dull yellow with the posterior coxæ black; wings dusky hyaline, rather densely pubescent, veins yellowish, the post-marginal vein very long.

Described from one ♂ captured at large.

Subfamily—TORYMINÆ.

CALLIMOME Spinola.

14. **Callimome theon** Walker.
15. **Callimome lissus** Walker.

I have identified both of these species from specimens captured at large last summer.

SYNTOMASPIS Förster.

16. **Syntomaspis californica** n. sp.

♀.—Length .14 inch; ovip. .25 inch. Golden green, coarsely, deeply punctate; eyes brown; antennæ black, scape dull yellow; coxæ metallic green, legs rufous; abdomen cupreous, first segment smooth, other segments finely reticulately scratched; ovipositor black; wings hyaline, veins dusky.

In the ♂ the first abdominal segment is blue.

Described from three specimens, two ♂ one ♀, bred from Cynipidous gall *Andricus pomiformis* Bass, from California.

Some of my species described as *Callimome* belong to this genus.

MEGASTIGMUS Spinola.

17. **Megastigmus flavipes** n. sp.

♂.—Length .12 inch. Head and thorax bright golden green, face finely reticulately strigose; thorax irregularly, transversely, coarsely strigose; antennæ clavate, scape and flagellum beneath yellow, flagellum above brown-black; the collar is rather short; the scutellum at tip is divided by a transverse suture and with a raised rim at border posteriorly; abdomen ovate, black; legs waxy yellow; wings hyaline, veins pale, excepting the stigmal vein, which is brown, and ends in a circular stigma.

Described from one specimen taken in August.

This is the second species described from North America, while in Europe there are six species known.

ORMYRUS Westwood.

18. **Ormyrus quercus** n. sp.

♂ ♀.—Length .08–.12 inch. Blue-black, with a greenish metallic lustre in certain lights; head punctate, more or less metallic green, with a long groove on cheek; eyes brown; antennæ brownish piceous, scape dull yellow; collar finely transversely strigose; abdomen acuminate, variegated with greenish and bluish bands; legs yellowish, with a large bluish blotch above on posterior femora; posterior tibial spur very long; wings hyaline, veins yellow.

Described from eight specimens (two ♂ six ♀) bred from Cynipidous gall (*Andricus batatoides* Ashm.)

19. **Ormyrus andricus** n. sp.

♀.—Length .12 inch. This species is much more robust than the preceding species, and the abdomen is not nearly so pointed, metallic green, finely, transversely rugulose; antennæ brown, scape pale; legs: the femora are dark brown, the tibiæ rufous and the tarsi yellowish, posterior tibial spurs short; wings hyaline, veins brownish.

Described from one ♀ specimen bred from Cynipidous gall (*Andricus difficilis* Ashm. ms.)

Subfamily—EUPELMINÆ.

EUPELMUS Dalmon.

20. **Eupelmus auratus** n. sp.

♀.—Length .11 inch; ovip. .02 inch. Bright golden green, surface shagreened; antennæ long, subclavate and obliquely truncate at tip; thorax but feebly depressed, inclined to scutellum; scutellum declining, obconical; legs bright lemon yellow; coxæ metallic green; wings hyaline.

Described from one ♀ taken at large, and two ♀ specimens bred from the Cynipidous oak gall *Andricus rugosus* Ashm.

The lemon yellow legs and the clear hyaline wings at once distinguish this species from all others in our fauna.

21. **Eupelmus dryorhizoxeni** n. sp.

♂ ♀.—Length .10–.14 inch; ovip. .02 inch. Apterous; head large, much broader than thorax, nearly smooth, greenish metallic on face, bluish on vertex, mentum black; eyes brown; antennæ subclavate, 11-jointed, scape dull yellow, flagellum blackish, hairy, thorax at sides and beneath reddish brown, above golden green with violaceous reflections; collar narrow, quadrate; parapsidal elevations very high, curved and yellowish brown; legs brownish yellow with the upper surface of femora and a blotch on the upper surface of tibiæ, in the middle, dark brown, ungues black; abdomen ovate, brown black, with a submetallic lustre; ovipositor pale.

Described from three specimens, one ♂ two ♀, bred May, 1885, from Cynipidous oak gall *Dryorhizoxenus floridanus* ♂ Ashm.

In one ♀ the brown markings on upper surface of femora and tibiæ are almost entirely obsolete.

The only other apterous *Eupelmid* in our fauna known to me is *Eupelmus epicaste* Walk., described in "Annals and Magazine of Natural History," vol. xx, p. 20, but it differs so widely in size and color that it cannot be confounded with this species.

22. **Eupelmus sphæricephalus** n. sp.

♀.—Length .14 inch. Blue-black, long and slender, finely punctate; head nearly spherical when viewed from above; face rather thickly covered with short, white pubescence; eyes dark; antennæ subclavate, including scape, black with a slight lustre; parapsides well defined, scutellum purplish; abdomen very long and narrow, beneath purplish; legs yellowish, middle tibial spur long, whitish, tibiæ with black teeth at tip, first tarsal joint large and widely dilated, beneath with double rows of black teeth; wings pale fusco-hyaline.

Described from specimen taken at large in August, 1885.

23. **Eupelmus cyaniceps** n. sp.

♀.—Length .14 inch; ovip. .03 inch. Head blue, brassy about mouth; eyes red; antennæ subclavate, including scape, black; thorax with the large pleuræ brassy green, sternum and abdomen blue; ovipositor blue with a yellow annulus in the middle; legs yellow, coxæ and femora dark brown with metallic lustre, upper surface of tibiæ at base and the last two apical tarsal joints and ungues brown, spur yellowish, teeth of dilated tarsal joint black; wings hyaline, veins yellow.

Described from one ♀ specimen captured at large.

This species approaches nearest to *Eupelmus lamachus* Walk.

24. **Eupelmus gemmarii** n. sp.

♀.—Length .11 inch; ovip. .02 inch. Rather robust, æneous; head punctate, face gold green; antennæ black; scape, scutellum, scapulæ, mesopleuræ, sternum, coxæ, trochanters, tibiæ at base, tarsi and ovipositor dull yellow; femora, apical half of tibiæ, ungues and last abdominal segment brown; wings hyaline, with a broad brown band across the middle.

Described from one ♀ specimen bred from Cynipidous oak gall *Andricus gemmarius* Ashm.

25. **Eupelmus quercus** n. sp.

♀.—Length .18 inch; ovip. .05.

This species so exactly resembles *Eupelmus mirabilis* Walsh, in size and general appearance, as to be remarkable, and were it not for the exserted ovipositor, might easily be confounded with that species.

It is at once distinguished from it, however, by the yellow exserted ovipositor, by the pleural pieces being black, and not rufo-piceous as in *mirabilis*, and without the white band at base of abdomen. There is a large brown blotch across wings leaving the base and tip hyaline.

Described from one specimen taken on an oak in April, 1881.

26. **Eupelmus zeli** n. sp.

♀.—Length .10 inch; ovip. .10 inch, yellow. Head and thorax finely shagreened and dark metallic green; eyes brown; antennæ pale brown; collar short, triangular; mesonotum with parapsidal grooves well defined, posterior raised lobe convex, bluish, raised parapsides, pleural pieces, sternum, coxæ and legs rufo-piceous, scutellum and scapulæ bright golden; middle tibial spur as long as first tarsal joint, first, second, third and fourth tarsal joints with black teeth beneath, spur and tarsi yellowish, upper edge of posterior tibiæ blackish; abdomen blue-black, with some long pubescence towards the tip; wings hyaline, with two transverse brown bands.

Described from two ♀ specimens bred April, 1885, from the eggs of the hemipteron *Zelus longipes* Linn.

27. **Eupelmus dryophantæ** n. sp.

♂ ♀.—Length .08 - .10 inch. Dull metallic green, in some specimens blackish; the face in ♂ and the abdomen is blue-black; antennæ, including scape, brown-black, slightly lustrous; legs in ♂ black or piceo-black, except tips of tibiæ, spur and tarsi, which are yellowish white; in ♀ the anterior legs are paler, with a blotch on the femora and tibiæ; wings in ♂ clear hyaline; in ♀ there is a brown blotch across the middle of wing, including the marginal and postmarginal veins.

Described from several specimens bred from Cynipidous oak gall (*Dryophanta laurifoliæ* Ashm.) in 1881.

Subfamily—ENCYRTINÆ.

BLASTOTHRIX Mayr.

28. **Blastothrix rosæ** n. sp.

♀.—Length .05 inch. Black, with some hairs; legs long, pale yellow with black coxæ, anterior and middle femora and tibiæ and posterior tibiæ and first tarsal joints brown, posterior femora thickened, pale; middle tarsal spur longer than first tarsal joint, white; abdomen black; wings hyaline veins yellowish.

Described from two specimens bred in April, 1881, from Rose Aphis (*Siphonophora rosæ* var. *floridæ* Ashm.), an aphis found on the Cherokee rose indigenous to Georgia and North Carolina.

ENCYRTUS Dalman.

29. **Encyrtus siphonophoræ** n. sp.

♀.—Length .04 inch. Black, in certain lights piceo-black, sparsely pubescent; mouth parts piceous; abdomen at sides and beneath testaceous, above black; legs: femora piceous, coxæ, tibiæ and tarsi yellow; wings hyaline, veins yellowish, submarginal vein broken before reaching the margin, marginal vein long, thick, postmarginal and stigmal veins short.

Described from several specimens bred in 1881, from Orange Aphis (*Siphonophora citrifolii* Ashm.)

Subfamily—PTEROMALINÆ.

PACHYNEURON Walker.

30. **Pachyneuron syrphi** n. sp.

♀.—Length .06 inch, ♂ .04 inch. Blue-black, shining, pubescent; antennæ brown; metathorax brassy; legs tawny, with the tibiæ slightly infuscated; middle tibial spur not quite as long as first tarsal joint; wings hyaline, the postmarginal vein as long as marginal and stigmal veins combined, stigmal vein slightly longer than the marginal.

In the ♂ the marginal vein is very short, the legs yellow, and the body is brassy.

Described from ♀ and ♂ specimens bred from Syrphus larvæ.

COPIDOSOMA Ratzeburg.

31. **Copidosoma melanocephalum** n. sp.

♂.—Length .05 inch. Pale yellow brown; head and eyes black; antennæ thick, clavate; scape, pedicel and first two joints of flagellum tawny yellow, other joints greatly thickened, dark brown, shading into black on club; wings fusco-hyaline, very hairy with the stigmal vein long and curved.

Described from one specimen bred May, 1885, from Cynipidous oak gall *Dryorhizoxenus floridanus* Ashm.

CHILONEURUS Westwood.

32. **Chiloneurus cupreicollis** n. sp.

♀.—Length .08 inch. Slender, pubescent; head dull metallic green; eyes red-brown; antennæ very long, slender, subclavate, the scape very long and slender with pedicel and first flagellar joint tawny yellow, flagellum dark brown; prothorax cupreous; scutellum bright yellow at base, dull metallic green towards tip and armed with a long black bristly horn; sternum piceous, the large mesopleural pieces coppery and violaceous; legs: coxæ and anterior legs tawny, middle legs infuscated with brown, posterior femora and tibiæ dark brown; abdomen violaceous above, cupreous beneath, pubescent; wings brown, base and extreme tips hyaline.

This beautiful species, the prettiest yet described of this interesting genus, was taken on *Lecanium* scales on oak in the summer of 1885.

HOMALOTYLUS Mayr.

33. **Homalotylus lachni** n. sp.

♀.—Length .06 inch. Robust, rust brown; head and thorax nearly smooth; eyes large brown, face narrow, with a few scattered punctures; surface back of eyes tawny yellow; antennæ brown; thorax with a plumbeous tinge; legs pale brown with the upper surface of tibiæ at base blackish, more apparent on posterior pair; abdomen black; wings whitish, hyaline, with a broad brown band across stigmal region and another narrow band near apex.

Described from specimens bred from the Pine Aphis *Lachnus australi* Ashm.

BOTHRIOTHORAX Ratzeburg.

34. **Bothriothorax Peckhamii** n. sp.

♂ ♀.—Length .11 inch. Very stout, robust; head, scape, two depressed humeral spots on thorax, a spot at base of wings and the scutellum bright red-brown; face with scattered coarse punctures; occiput, flagellum, thorax and abdomen black; abdomen æneous at base; legs pale brown, with all the tibiæ brown black, tarsi pale; wings hyaline, a narrow transverse band as wide as and including the bend in the submarginal vein, the apex from beginning of postmarginal vein brown.

Hab.—Milwaukee, Wis.

Described from two specimens kindly sent me by Prof. George H. Peckham, of Milwaukee, Wis., to whom I take pleasure in dedicating the species.

Subfamily—APHELININÆ.

COCCOPHAGUS Westw.

35. **Coccophagus purpureus** n. sp.

♀.—Length .10 inch. Robust and of a uniform purplish black color throughout, including abdomen, coxæ and femora; the surface is very finely punctate and the tibiæ and tarsi are yellow; wings except at base brown.

This is an easily recognized species, and was captured on gall berry bushes.

Subfamily—PIRENINÆ.

MACROGLENES Westw.

36. **Macroglenes querci-pisi** Fitch.

I have bred two chalcids from Cynipidous gall *Holcaspis ficula* Bass, which agree very well with Dr. Fitch's description of this species.

The following species is new, and approaches nearest to Dr. Fitch's *Macroglenes:*

Macroglenes dryorhizoxeni n. sp.

♀.—Length .10 inch. Black, coarsely but not deeply punctate; head large, much broader than thorax; face, sternum and abdomen blue-black; antennæ subclavate, scape long and slender, pale, becoming yellowish at tip, pedicel twice as long as broad, yellow, flagellum black, pubescent; thorax and abdomen pubescent; abdomen cupreous; collar very short, thorax without grooves: legs yellowish, tibiæ and tarsi pale; wings hyaline, veins yellow, marginal vein but slightly longer than stigmal, the latter slender but thickened at tip.

Described from two specimens bred May, 1885, from the Cynipidous gall *Dryorhizoxenus floridanus* Ashm.

Subfamily—ELACHRISTINÆ.

ELACHRISTUS Spinola.

37. **Elachristus flavipes** n. sp.

♀.—Length .06 inch. Aeneous with metallic greenish reflections; head punctate, pubescent above; eyes brown, pubescent; antennæ inserted near lower margin of face, scape pale yellow, flagellum black, pubescent, club greatly thickened; thorax with some long hairs; scutellum with a middle longitudinal groove; legs pale yellow; abdomen ovate with a very short petiole, hairs at tip; wings hyaline, submarginal and postmarginal veins yellowish, marginal piceous.

Described from specimens captured at large.

CIRROSPILUS Westw.

38. **Cirrospilus purpureus** n. sp.

♀.—Length .11 inch. Head, sternum and abdomen purplish blue; thorax and scutellum golden green; head smooth, wider than thorax, face emarginate; antennæ 7-jointed (counting 2-jointed club, 8-jointed), scape dark or blackish, shining, flagellum pale brown, pubescent; thorax punctate; mesonotum longer than broad; scutellum large, rounded; abdomen long, ovate, pointed at tip, nearly sessile; legs: coxæ and femora blue-black, tibiæ dark, tarsi and knees pale, last tarsal joint and ungues black; wings hyaline, veins pale.

Described from one specimen captured at large.

Subfamily—EULOPHINÆ.

SYMPIEZUS Förster.

39. **Sympiezus flavipes** n. sp.

♀.—Length .11 inch. Head and thorax above golden green, face emarginate; antennæ 7-jointed, scape pale yellow, flagellum brown; eyes red; scutellum rounded, bluish at tip; abdomen brassy above bluish beneath; legs bright yellow, tibiæ and tarsi paler; posterior coxæ metallic green; wings hyaline, marginal and postmarginal veins long, stigmal vein short.

Described from one specimen captured at large.

Subfamily—TETRASTICHINÆ.

GYROLASIA Förster.

40. **Gyrolasia nigrocyaneus** n. sp.

♀.—Length .10 inch. Blue-black; head, thorax and abdomen punctate; antennæ 6-jointed, hairy, joints separated and almost moniliform, black; scape, coxæ and femora tawny yellow, tibiæ and tarsi pale yellow, ungues with posterior apical tarsal joint brown; wings hyaline, marginal vein more than twice as long as submarginal, no postmarginal vein.

Described from one ♀ specimen bred from Cynipidous oak gall *Dryorhizoxenus floridanus* Ashm.

TETRASTICHUS Haliday.

41. **Tetrastichus racemariæ** n. sp.

♂ ♀.—Length .07 to .09 inch. Aeneous black, smooth; scape of antennæ tawny yellow, flagellum, coxæ and femora black, trochanters and a narrow annulus near base of tibiæ piceous brown, tibiæ and tarsi yellowish white; scutellum with two large parallel grooves; wings hyaline, veins yellowish, the postmarginal vein wanting; there is no noticeable difference in the ♂.

Described from three ♂ bred from Cynipidous oak gall *Amphibolips racemaria* Ashm., and numerous specimens in both sexes bred from oak gall *Amphibolips cinerea* Ashm.

The specimens bred from the latter are much the smaller, but otherwise similar.

42. **Tetrastichus rosæ** n. sp.

♂ ♀.—Length .04–.06 inch. Black, shining; antennæ, femora and wing veins yellowish, ungues brown; scutellum with two longitudinal grooves, postmarginal vein in ♀ wanting, in ♂ slightly developed.

Described from several specimens bred June, 1881, from the rose gall *Rhodites ignota* O. S.

This species resembles *T. racemariæ* somewhat, but its much smaller size and the color of antennæ and legs will at once distinguish it.

43. **Tetrastichus acutus** n. sp.

♂.—Length .08 inch. Blue-black with greenish metallic reflections; face greatly emarginate, making the head very sharp on vertex; eyes and antennæ brown; antennæ 6-jointed; thorax and scutellum with microscopical longitudinal engraved lines; scutellum with two grooves; abdomen acutely pointed, rather strongly tinged with greenish metallic reflections, posterior coxæ green; legs yellow, posterior femora brown, excepting the yellow tip, ungues brown.

Described from one specimen captured at large.

A very distinct species.

44. **Tetrastichus flavipes** n. sp.

♀.—Length .07 inch. Black, very elongate and slender; head much larger than thorax and greatly emarginate in front with vertex sharp, region around ocelli yellow testaceous; eyes brown; antennæ 6-jointed, brown, pubescent; thorax slender, elongated and not thick through, the collar is pointed, so that the head appears prominently separated; the scutellum has the usual two grooves, space between it and the mesoscutellum deeply depressed; abdomen ovate much broader than thorax and slightly flattened, hairy; legs long, slender, the posterior pair much longer than anterior pair, femora and middle of tibiæ black or brown, tibiæ and tarsi and base of fore-femora testaceous; wings hyaline, bordered with short ciliæ, veins testaceous, marginal vein slightly thickened, postmarginal wanting, stigmal short.

Described from three ♂ specimens bred from Cynipidous oak gall *Holcaspis ficigera* Ashm.

OXYOMORPHA Förster.

45. **Oxyomorpha livida** n. sp.

♀.—Length .14 inch. Uniform dark blue, including legs, excepting the first three tarsal joints, which are pale or white, and the upper surface of the thorax which has a greenish metallic tinge; the antennæ are black and hairy; thorax punctate; abdomen is very long and slenderly pointed; wings hyaline, with pale yellowish veins, the marginal vein is long and thickened, the stigmal short, while the postmarginal vein is long.

Described from one ♀ specimen swept from bushes in a low swampy meadow.

This genus was founded by Dr. Förster in 1856. "Hymenopterologische Studien II Chalcidiæ und Proctotrupii p. 145," and this is the first species described in our fauna.

A Review of the species described by Olivier in the "Entomologie."

BY GEORGE H. HORN, M. D.

In the following pages it is proposed to pass in review the species described by Olivier, whether originally by himself or by quotation from others, cited from our fauna. These species have been gone over so frequently in past years that it seems to have been assumed that nothing remained to be done. Really comparatively little new will be found in the following pages, but it is deemed sufficient to warrant the publication of the entire list.

The "Entomologie" consists of six large quarto volumes of text and two of plates, which bear date as follows: vol. i, 1789; vol. ii, 1790; vol. iii and iv, 1795; vol. v, 1807; vol. vi, 1808. In the first four volumes the different genera are treated as if distinct pamphlets,

each having its separate paging. The genera are numbered continuously throughout the work, and by a little manipulation are made to count an even hundred. The last two volumes have a continuous and continued paging. The entire work is one of the most troublesome from which to make a citation of any in the entire range of entomological literature.

In the following pages the volumes are treated separately. The number following the generic name is that used by Olivier, that following the species is the page subordinate to the generic number. In the vast majority of cases the Olivierian species merely require a change of generic name. In some instances the specific name is a synonym, and it will be observed, especially among the Chrysomelidæ, that we are at present using names of a more modern origin for many of the Olivierian species, in which case the name to be dropped is in *italics*. The number about which any doubt remains does not exceed ten, the entire number enumerated being a little more than three hundred.

VOLUME I.

Lucanus (1)
- Elaphus *Fab.*, 12.
- capreolus *Linn.*, 15. = L. (*dama* Fab.)

Scarabæus (3)
- Tityus *Linn.*, 9. = Dynastes.
- Antæus *Fab.*, 24. = Strategus.
- Maimon *Fab.*, 29. = S. Antæus *Fab.* [1]
- Satyrus *Fab.*, 39. = Xyloryctes.
- Lazarus *Fab.*, 63. = Bolboceras.
- splendidus *Fab.*, 67. = Geotrupes.
- Cephus *Fab.*, 68. = Bolboceras farctus *Fab.*
- carolinus *Linn.*, 134. = Copris.
- carnifex *Linn.*, 135. = Phanæus.
- gibbosus *Fab.*, 154. = Deltachilum.
- lævis *Drury*, 161. = Canthon hudsonias *Forst.*

Trox (4)
- tuberculatus *De Geer*, 9.

Melolontha (5)
- occidentalis *Linn.*, 14. = Polyphylla.
- lanigera *Linn.*, 21. = Cotalpa.
- punctata *Linn.*, 22. = Pelidnota.
- fervida *Fab.*, 24. = Lachnosterna fusca *Frölh.*
- innuba *Fab.*, 46. = Anomala (? minuta *Burm.*)
- variabilis *Fab.*, 52. = Serica holosericea *Scop.* Europe.
- subspinosa *Fab.*, 70. = Macrodactylus

Cetonia (6)
- nitida *Linn.*, 18. = Allorhina.
- tristis ‡ *Oliv.*, 22. = Gymnetis marmorea *Oliv.* [2]
- fulgida *Fab.*, 33. = Euphoria.
- herbacea *Oliv.*, 35. = Euphoria.
- inda *Linn.*, 40. = id.
- lurida ‡ *Oliv.*, 43. = E. sepulcralis *Fab.*
- areata *Fab.*, 48. = Euphoria.
- delta *Fab.*, 64. = Trichius.
- canaliculata *Oliv.*, 69. = Valgus.
- convexa *Oliv.*, 72. = Antichira, Brasil.

[1]—This is the form of Antæus in which the thoracic processes are feebly developed.

[2]—This species occurs in the West Indies and South America. Our *G. Sallei* is closely related.

VOLUME II.

Necrophorus (10)
americanus *Oliv.*, 6.
Silpha (11)
americana *Linn.*, 8.
marginalis *Fab.*, 10. = S. noveboracensis *Forst.*
inæqualis *Fab.*, 14.
Nitidula (12)
fasciata *Oliv.*, 7 = Ips.
sanguinolenta *Oliv.*, 8. = Ips.
Trogossita (19)
virescens *Fab.*, 8.
Telephorus (26)
bimaculatus *Fab.*, 11. = Chauliognathus pennsylvanicus *De Geer.*
Lampyris (28)
pennsylvanica *De Geer*, 25. = Photuris.
pyralis *Linn.*, 17. = Photinus.
corusca *Linn.*, 19. = Ellychnia.
plumosa *Oliv.*, 26. = Phengodes.
atra *Oliv.*, 27. = Lucidota.
Lycus (29)
reticulatus *Fab.*, 7. = Calopteron.
Elater (31)
fasciculatis *Fab.*, 8. = Hemirhipis.
oculatus *Linn.*, 11. = Alaus.
luscus *Fab.*, 12. = id. [1]
flavipes *Fab.*, 30. [2]
cruentus *Oliv.*, 45. = Adelocera discoidea *Weber.*
pulchellus *Linn.*, 51. = Cryptohypnus.
Buprestis (32)
striata *Fab.*, 15.
rufipes *Oliv.*, 16.
decora *Fab.*, 18.
aurulenta *Linn.*, 18.
lurida *Fab.*, 20. = Dicereal
fasciata *Fab.*, 21.
viridula *Oliv.*, 27. = Dicercomorpha Philippines.
lineata *Fab.*, 28.
femorata *Oliv.*, 47. = Chrysobothris.
ornata *Fab.*, 50. = Acmæodera.
Andreae *Oliv.*, 53. = Julodis, Persia.
meditabunda *Fab.*, 74. = Cisseis, S. America.
ruficollis *Fab.*, 78. = Agrilus.
Cicindela (33)
purpurea *Oliv.*, 14.
tristis *Fab.*, 15. = Oxychila, Brazil.
unipunctata *Fab.*, 23.
sexguttata *Fab.*, 26.
punctulata *Fab.*, 27.
carolina *Linn.*, 29. = Tetracha.
virginica *Linn.*, 30. = id.

VOLUME III.

Carabus (35)
tædatus *Fab.*, 28.
calidus *Fab.*, 30. = Calosoma.
scrutator *Fab.*, 41. = id.
elevatus *Fab.*, 46. = Cychrus.
unicolor *Fab.*, 47. = large race of elevatus *Fab.*
caliginosus *Fab.*, 49. = Harpalus.
bicolor *Fab.*, 57. = H. pennsylvanicus *De Geer.*
americanus *Linn.*, 63. = Galerita.
pennsylvanicus ‡ *Oliv.*, 72 = Harpalus erraticus *Say.*
lineola *Fab.*, 78. = Agonoderus.

[1]—Alaus luscus *Fab.*, is usually placed as a synonym of *oculatus*, but the description and figure clearly show that myops *Fab.*, is the same and the latter name really older.

[2]—This cannot be identified. As the name was preoccupied at the time it was given it should be dropped.

bifasciatus *Oliv.*, 88. = Calophæna (Brazil.)
pallipes *Fab.*, 89. = Agonoderus.
vittatus *Fab.*, 97. = Lebia.

Scarites (36)
subterraneus *Fab.*, 8.

Gyrinus (41)
americanus *Linn.*, 12. = Dineutes (*assimilis* Kby.)

Cantharis (46)
sinuata *Oliv.*, 9. = Pyrota.
vittata *Fab.*, 13. = Epicauta.
lineata *Oliv.*, 14. = Pyrota.
atrata *Fab.*, 17. = Epicauta pennsylvanica *De Geer.*

Pyrochroa (53)
flabellata *Fab.*, 5.

Horia (53 bis.)
maculata *Swed.*, 4.

Cistela (54)
femoralis *Oliv.*, 12. = Androchirus.

Diaperis (55)
bicornis *Fab.*, 6. = Hoplocephala.

Tenebrio (57)
lævis *Oliv.*, 10. = Merinus.
saperdoides *Oliv.*, 11. = Xylopinus.
planus *Oliv.*, 14. = Pytho (*americanus* Kby.)
depressus || *Fab.*, 15. = Pytho (*americanus* Kby.)

Helops (58)
vittatus *Oliv.*, 4. = H. micans *Fab.*

Mordella (64)
octopunctata *Fab.*, 6.

Rhipiphorus (65)
dimidiatus *Fab.*, 8.

VOLUME IV.

Prionus (66)
cylindricus *Fab.*, 23. = Orthosoma brunneum *Forst.*
imbricornis *Linn.*, 28.

Cerambix (67)
lynceus *Fab.*, 37. = Tragidion coquus *Linn.*
garganicus *Fab.*, 39. = Chion cinctus *Drury.*
rusticus *Fab.*, 41. = Chion cinctus *Drury.*
bidens *Fab.*, 42. = Elaphidion (? mucronatum *Say.*)
scalator *Fab.*, 67. = Plectrodera.
nodosus *Fab.*, 75. = Acanthocinus.
titillator *Fab.*, 85. = Monohammus.
carolinensis *Oliv.*, 85. = M. titillator *Fab.*
tornator *Fab.*, 103. = Tetraopes tetraophthalmus *Forst.*
stigma *Oliv.*, 126. = Eburia.
obsoletus *Oliv.*, 130. = Acanthocinus.

Saperda (68)
lateralis *Fab.*, 17.
plumbea *Oliv.*, 24. = Oberea ruficollis *Fab.*
cinerea *Oliv.*, 28. = Hetoemis.
tridentata *Oliv.*, 30.
maculata *Oliv.*, 32. [1]
bicolor *Oliv.*, 32. = Ancylocera.
maculata *Oliv.*, 39. = duplicate description.

Stenocorus (69)
lineatus *Oliv.*, 13. = Rhagium.
undatus *Fab.*, 25. = Distenia.

Callidium (70)
marylandicum *Fab.*, 6. = Romaleum atomarium *Drury.*
bajulus *Linn.*, 7. = Hylotrupes.
ligneum *Fab.*, 23. = Hylotrupes.
dentipes *Oliv.*, 29. = Plectromerus.
colonum *Fab.*, 31. = Xylotrechus.

[1]—May this not be *Callidium dentipes* described further on? The figure on 68, pl. iii, fig. 33, is certainly a better representation than on 70, pl. iv, fig. 40. The two insects were from the same locality and loaned to Olivier by the same person.

fulminans *Fab.*, 32. = Arhopalus.
flexuosum *Fab.*, 34. = Cyllene robiniæ *Forst.*
rhombifer *Oliv.*, 46. = Neoclytus angulatus *Fab.*
erytrocephalus *Fab.*, 48. = Neoclytus.
scutellare *Oliv.*, 51. = Neoclytus.
varium *Fab.*, 54. = Phymatodes.
picipes *Fab.*, 57. = Euderces.
notatum *Oliv.*, 61. = Stenosphenus.
decorum *Oliv.*, 63. = Cyllene.
villicus *Oliv.*, 64. = Xylotrechus colonus *Fab.*
campestris *Oliv.*, = Xylotrechus colonus *Fab.*
ruricola *Oliv.*, 65. = Clytanthus.
verrucosum *Oliv.*, 67. = Cyrtophorus.
pulverulentum *Oliv.*, 69. [2]
pini *Oliv.*, 71. = Euderces.

Leptura (73)
canadensis *Oliv.*, 6.
velutina *Oliv.*, = 18. = Lypocerus.
zebra *Oliv.*, 19. = L. nitens *Forst.*
luticornis *Fab.*, 20. = Strangalia.
acuminata *Oliv.*, 20. = id.
lateralis *Oliv.*, 22. = Euryptera.
cordifera *Oliv.*, 25.
vittata *Oliv.*, 30.
vagans *Oliv.*, 31.
arcuata *Oliv.*, 32. = L. lunata *Fab.*
circumdata *Oliv.*, 32.

Necydalis (74)
sanguinicollis *Oliv.*, 9. = Callimoxys.

Cucujus (74 bis.)
clavipes *Fab.*, 4.
rufus *Fab.*, 5. = Catogenus.

Donacia (75)
palmata *Oliv.*, 8.
cærulea *Oliv.*, 10. not identified.

Clerus (76)
sphegeus *Fab.*, 12.
ichneumoneus *Fab.*, 13.
rufus *Oliv.*, 14. = C. ichneumoneus *Fab.*
thoracicus *Oliv.*, 18.
quadriguttatus *Oliv.*, 18.

Bostrichus (77)
rugosus *Oliv.*, 18. = ? Dinoderus sp.?

Scolytus (78)
flavicornis *Fab.*, 4. = Platypus.
quadridentatus *Oliv.*, 5. = Platypus.
terebrans *Oliv.*, 6. = Dendroctonus.
frontalis *Oliv.*, 13. = Phloeotribus.

Bruchus (79)
robiniæ *Fab.*, 7. = Spermophagus.
gleditsiæ *Linn.*, 9. = Caryoborus (? arthriticus *Fab.*)
coryphæ *Oliv.*, 16.
quadrimaculatus *Fab.*, 19.
hibisci *Oliv.*, 21.

Macrocephalus (80)
fasciatus *Oliv.*, 9. = Eurymycter.
marmoreus *Oliv.*, 12. = Cratoparis lunatus *Fab.*
lugubris *Oliv.*, 13. = Cratoparis.
bimaculatus *Oliv.*, 14. = Tropideres.

VOLUME V.

Attelabus (81)
bipustulatus *Fab.*, 10. = Attelabus.
ovatus *Fab.*, 11. = Pterocolus.

Rhynchites (81)
bicolor *Fab.*, 23.
hirtus *Fab.*, 26.
nigripennis *Fab.*, 27. = Eugnamptus angustatus *Hbst.*
collaris *Fab.*, 28. = Eugnamptus.

Calandra (83)
cruentata *Fab.*, 82. = Rhynchophorus.
fasciata *Fab.*, 83. = Sphenophorus (not from U. S.)
cribraria *Fab.*, 88. = Rhodobænus 13-punctatus *Illig.*

---

[2]—Probably a small species of Elaphidion, but as far as I know not identified.

pertinax *Oliv.*, 90. = Sphenophorus.
cariosa *Oliv.*, 91. = idem.
callosa *Oliv.*, 92. = idem.
melanocephala *Fab.*, 93. = idem.
necydaloides *Fab.*, 94. = idem.

Rhynchænus (83)
striatus *Fab.*, 114. = Hylobius pales *Hbst.*
pini *Oliv.*, 116. [1]
vulpeculus *Fab.*, 129. = Mononychus.
apiatus *Oliv.*, 171. = Hilipus (? squamosus *Lec.*)
argula *Fab.*, 192. = Conotrachelus nenuphar *Hbst.*
proboscideus *Fab.*, 217. = Balaninus (*caryatrypes* Boh.)

Rhina (83)
plagiata *Fab.*, 234. = Læmosaccus.

Lixus (83)
gravidus *Oliv.*, 275. [2]

Curculio (83)
opalus *Oliv.*, 339. = Pachnæus.
punctatulus *Fab.*, 402. = Ithycerus noveboracensis *Forst.*

Brentus (84)
maxillosus *Oliv.*, 443. = Eupsalis minuta *Drury.*

Languria (88)
bicolor *Fab.*, 463.
thoracica *Oliv.*, 463. = L. bicolor *Fab.*
Mozardi *Latr.*, 464.

Eryotylus (89)
quadripunctatus *Oliv.*, 484. = Ischyrus.

Chrysamela (91)
trimaculata ‡ *Fab.*, 515. = Doryphora clevicollis *Kby.*
philadelphica *Linn.*, 525.
stolida *Fab.*, 526. = Blepharida rhois *Forst.*
pulchra *Fab.*, 526. = C. suturalis *Fab.*
exclamationis *Fab.*, 530.
meticulosa *Oliv.*, 531. = Blepharida rhois *Forst.*
elegans *Oliv.*, 533.
interrupta *Fab.*, 538. = Lina lapponica *Linn.*
scripta *Fab.*, 559. = Lina.

Helodes (91 bis)
vittata *Oliv.*, 595. = Prasocuris (*varipes* Cr.) [3]

VOLUME VI.

Galeruca (93)
duodecim-punctata *Fab.*, 628. = Diabrotica.
baccharidis *Weber.*, 629. = Trirhabda tomentosa *Linn.*

---

[1]—This is the European *Pissodes notatus* Fab. It is probable that Olivier mixed one of our species with it.

[2]—Probably a Lixus, but cannot be identified. It is placed in in Larinus in the "Catalogus," and, if correctly, certainly not North American.

[3]—*Prasocuris phellandrii* also occurs in our fauna, and Helodes trivittata *Say*, is a synonym.

gelatinariæ *Fab.*, 631. = Galeruca [1] xanthomelæna *Schrank.*
vittata *Fab.*, 633. = Diabrotica.
americana *Fab.*, 636. = Adimonia.
notulata *Fab.*, 636. = Galeruca.
notata *Fab.*, 637. = Galeruca.
furcata *Oliv.*, 643. [2]
dorsalis *Oliv.*, 646. = Phyllechthrus.
caminea *Fab.*, 656. = Cerotoma trifurcata *Forst.*

Altica (93 bis)
petaurista *Fab.*, 674. = Oedionychis.
thoracica *Fab.*, 678. = Oedionychis.
abdominalis *Oliv.*, 679. = Oedionychis vians *Illig.*
concinna *Fab.*, 679. = Oedionychis var.
caroliniana *Fab.*, 684. = Disonycha (*punctigera* Lec.)
glabrata *Fab.*, 685. = Disonycha.
miniata *Fab.*, 685. = Oedionychis.
conjugata *Fab.*, 686. = Disonycha pennsylvanica *Ill.* pale var.
quercata *Fab.*, 687. = Oedionychis (*limbalis* Mels.)
obsidiana *Fab.*, 691. = Oedionychis. [3]
suturalis *Fab.*, 692. = Oedionychis. [4]
elongata *Fab.*, 694. = Systena hudsonias *Forst.*
frontalis *Fab.*, 694. = Systena.
tibialis *Oliv.*, 697. = Lactica (*ocreata* Say.)
collata *Fab.*, 702. = Disonycha collaris *Fab.* (*mellicollis* Say.)
iris *Oliv.*, 702. = Lactica (*specularis* Harold.)
polita *Oliv.*, 706. = Graptodera [5]
liturata *Oliv.*, 707. = Oedionychis quercata *Fab.* [6]

---

[1]—The names Galeruca and Adimonia are used in the same sense as in the "Classification Col. N. A." In the "Catalogus" the former name is equal to Galerucella and the latter to Galeruca.

[2]—This species is quoted doubtfully from N. A. In the "Catalogus" it is placed as a synonym of Cerotoma trifurcata *Forst.* (*caminea* Fab.), but this cannot possibly be true.

[3]—This is a variety of the one above with the sides of the thorax alone pale.

[4]—Is the variety entirely pale above with the suture ferruginous brown, wider at base.

[5]—Graptodera polita *Oliv.*, is an olive green species of the size and form of *foliacea.* The elytra are scarcely visibly punctate, the thorax with feeble transverse impression. The antennæ and legs are rufo-testaceous, the hind femora piceous. I know but one other species in our fauna with pale legs, *G. fuscoænea* Mels. This is much smaller and more robust, the elytra very distinctly punctured.

[6]—This is the larger variety of *quercata* in which the elytral markings are broken into vittæ.

bifasciatus *Oliv.*, 88. = Calophæna (Brazil.)
pallipes *Fab.*, 89. = Agonoderus.
vittatus *Fab.*, 97. = Lebia.

Scarites (36)
subterraneus *Fab.*, 8.

Gyrinus (41)
americanus *Linn.*, 12. = Dineutes (*assimilis* Kby.)

Cantharis (46)
sinuata *Oliv.*, 9. = Pyrota.
vittata *Fab.*, 13. = Epicauta.
lineata *Oliv.*, 14. = Pyrota.
atrata *Fab.*, 17. = Epicauta pennsylvanica *De Geer.*

Pyrochroa (53)
flabellata *Fab.*, 5.

Horia (53 bis.)
maculata *Swed.*, 4.

Cistela (54)
femoralis *Oliv.*, 12. = **Androchirus.**

Diaperis (55)
bicornis *Fab.*, 6. = **Hoplocephala.**

Tenebrio (57)
lævis *Oliv.*, 10. = **Merinus.**
saperdoides *Oliv.*, 11. = **Xylopinus.**
planus *Oliv.*, 14. = **Pytho** (*americanus* Kby.)
depressus || *Fab.*, 15. = **Pytho** (*americanus* Kby.)

Helops (58)
vittatus *Oliv.*, 4. = **H. micans** *Fab.*

Mordella (64)
octopunctata *Fab.*, 6.

Rhipiphorus (65)
dimidiatus *Fab.*, 8.

VOLUME IV.

Prionus (66)
cylindricus *Fab.*, 23. = Orthosoma brunneum *Forst.*
imbricornis *Linn.*, 28.

Cerambix (67)
lyneeus *Fab.*, 37. = **Tragidion coquus** *Linn.*
garganicus *Fab.*, 39. = Chion cinctus *Drury.*
rusticus *Fab.*, 41. = Chion cinctus *Drury.*
bidens *Fab.*, 12. = Elaphidion (? mucronatum *Say.*)
scalator *Fab.*, 67. = Plectrodera.
nodosus *Fab.*, 75. = Acanthocinus.
titillator *Fab.*, 85. = Monohammus.
carolinensis *Oliv.*, 85. = M. titillator *Fab.*
tornator *Fab.*, 103. = Tetraopes tetraophthalmus *Forst.*
stigma *Oliv.*, 126. = Eburia.
obsoletus *Oliv.*, 130. = **Acanthocinus.**

Saperda (68)
lateralis *Fab.*, 17.
plumbea *Oliv.*, 24. = **Oberea ruficollis** *Fab.*
cinerea *Oliv.*, 28. = **Hetoemis.**
tridentata *Oliv.*, 30.
maculata *Oliv.*, 32. [1]
bicolor *Oliv.*, 32. = **Ancylocera.**
maculata *Oliv.*, 39. = **duplicate description.**

Stenocorus (69)
lineatus *Oliv.*, 13. = **Rhagium.**
undatus *Fab.*, 25. = **Distenia.**

Callidium (70)
marylandicum *Fab.*, 6. = **Ronualeum atomarium** *Drury.*
bajulus *Linn.*, 7. = **Hylotrupes.**
ligneum *Fab.*, 23. = **Hylotrupes.**
dentipes *Oliv.*, 29. = **Plectromerus.**
colonum *Fab.*, 31. = **Xylotrechus.**

[1]—May this not be *Callidium dentipes* described further on? The figure on 68, pl. iii, fig. 33, is certainly a better representation than on 70, pl. iv, fig. 40. The two insects were from the same locality and loaned to Olivier by the same person.

fulminans *Fab.*, 32. = Arhopalus.
flexuosum *Fab.*, 34. = Cyllene robiniæ *Forst.*
rhombifer *Oliv.*, 46. = Neoclytus angulatus *Fab.*
erytrocephalus *Fab.*, 48. = Neoclytus.
scutellare *Oliv.*, 51. = Neoclytus.
varium *Fab.*, 54. = Phymatodes.
picipes *Fab.*, 57. = Euderces.
notatum *Oliv.*, 61. = Stenosphenus.
decorum *Oliv.*, 63. = Cyllene.
villicus *Oliv.*, 64. = Xylotrechus colonus *Fab.*
campestris *Oliv.*, = Xylotrechus colonus *Fab.*
ruricola *Oliv.*, 65. = Clytanthus.
verrucosum *Oliv.*, 67. = Cyrtophorus.
pulverulentum *Oliv.*, 69. [2]
pini *Oliv.*, 71. = Euderces.

Leptura (73)
canadensis *Oliv.*, 6.
velutina *Oliv.*, = 18. = Lypocerus.
zebra *Oliv.*, 19. = L. nitens *Forst.*
luticornis *Fab.*, 20. = Strangalia.
acuminata *Oliv.*, 20. = id.
lateralis *Oliv.*, 22. = Euryptera.
cordifera *Oliv.*, 25.
vittata *Oliv.*, 30.
vagans *Oliv.*, 31.
arcuata *Oliv.*, 32. = L. lunata *Fab.*
circumdata *Oliv.*, 32.

Necydalis (74)
sanguinicollis *Oliv.*, 9. = Callimoxys.

Cucujus (74 bis.)
clavipes *Fab.*, 4.
rufus *Fab.*, 5. = Catogenus.

Donacia (75)
palmata *Oliv.*, 8.
cærulea *Oliv.*, 10. not identified.

Clerus (76)
sphegeus *Fab.*, 12.
ichneumoneus *Fab.*, 13.
rufus *Oliv.*, 14. = C. ichneumoneus *Fab.*
thoracicus *Oliv.*, 18.
quadriguttatus *Oliv.*, 18.

Bostrichus (77)
rugosus *Oliv.*, 18. = ? Dinoderus sp.?

Scolytus (78)
flavicornis *Fab.*, 4. = Platypus.
quadridentatus *Oliv.*, 5. = Platypus.
terebrans *Oliv.*, 6. = Dendroctonus.
frontalis *Oliv.*, 13. = Phloeotribus.

Bruchus (79)
robiniæ *Fab.*, 7. = Spermophagus.
gleditsiæ *Linn.*, 9. = Caryoborus (? arthriticus *Fab.*)
coryphæ *Oliv.*, 16.
quadrimaculatus *Fab.*, 19.
hibisci *Oliv.*, 21.

Macrocephalus (80)
fasciatus *Oliv.*, 9. = Eurymycter.
marmoreus *Oliv.*, 12. = Cratoparis lunatus *Fab.*
lugubris *Oliv.*, 13. = Cratoparis.
bimaculatus *Oliv.*, 14. = Tropideres.

VOLUME V.

Attelabus (81)
bipustulatus *Fab.*, 10. = Attelabus.
ovatus *Fab.*, 11. = Pterocolus.

Rhynchites (81)
bicolor *Fab.*, 23.
hirtus *Fab.*, 26.
nigripennis *Fab.*, 27. = Eugnamptus angustatus *Hbst.*
collaris *Fab.*, 28. = Eugnamptus.

Calandra (83)
cruentata *Fab.*, 82. = Rhynchophorus.
fasciata *Fab.*, 83. = Sphenophorus (not from U. S.)
cribraria *Fab.*, 88. = Rhodobænus 13-punctatus *Illig.*

---

[2]—Probably a small species of Elaphidion, but as far as I know not identified.

Additional Notes.

While going over the Olivierian species my attention was directed to the species described by Say under the name Colaspis as follows:

C. pretexta *Say*, is Rhabdopterus picipes *Oliv.*

C. ovata *Say*, is Chrysodina globosa *Oliv.*

C. convexa *Say*, is a Nodonota and has been placed as a synonym of N. tristis *Oliv.*, but incorrectly.

C. striata *Say*, is Paria aterrima *Oliv.*

C. puncticollis *Say*, is a Nodonota, and has since been described as N. strigicollis *Lefev.*; it may be known by having the sides of the elytra obtusely subcarinate behind the humeral umbone; the legs are usually pale, but vary to piceous.

C. decemnotata *Say*, is a Xanthonia.

C. sexnotata *Say* and

C. quadrinotata *Say*, are varieties of the same, and identical with Paria canella *Fab.*

C. pallida *Say*, is a Metachroma.

C. dubiosa *Say*, was placed by Crotch in Metachroma, which, as constituted by him, is apparently composite, and the species should be separated.

C. favosa *Say*, is a true Colaspis.

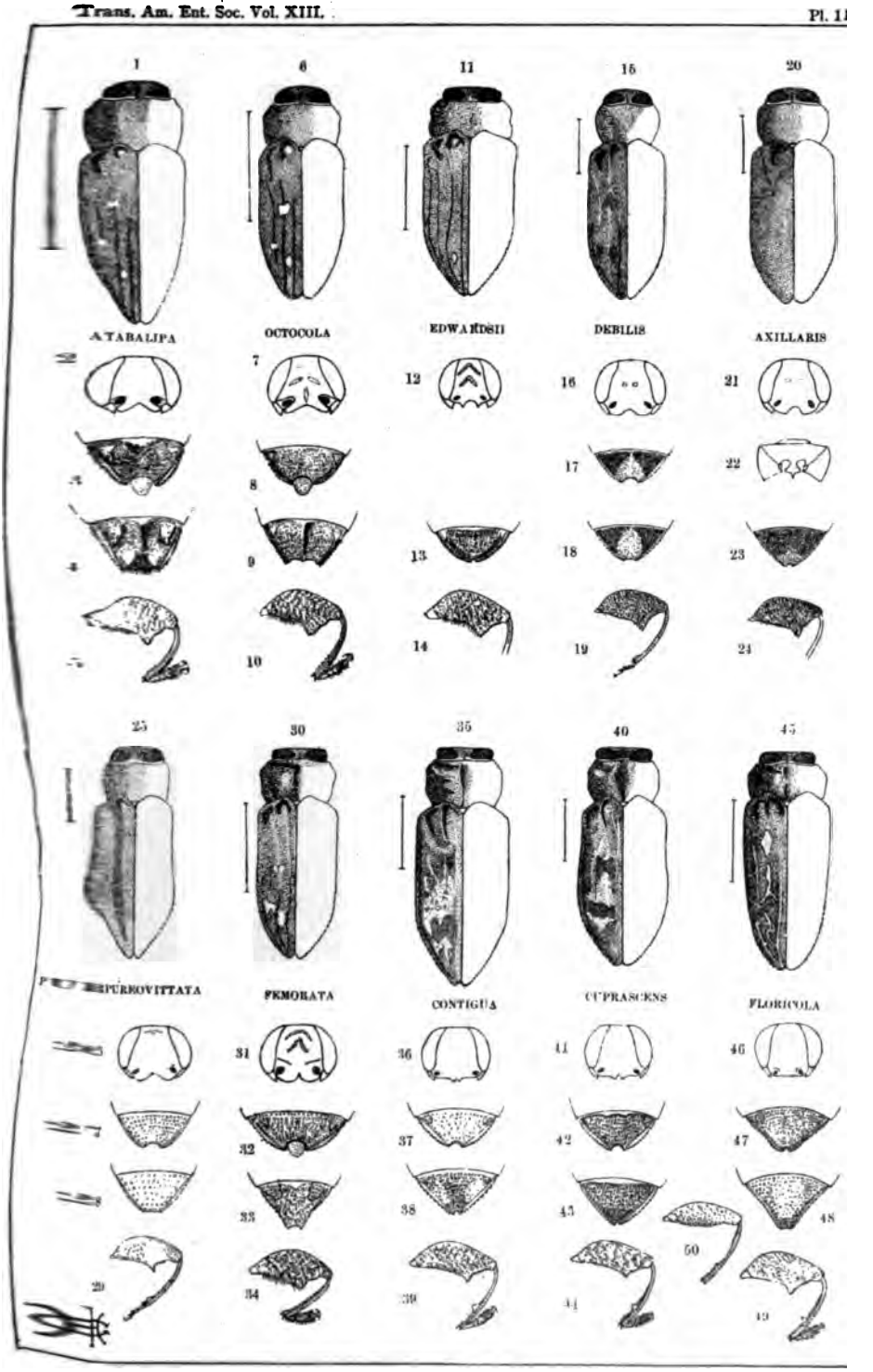
C. denticollis *Say*, is a Myochrous.

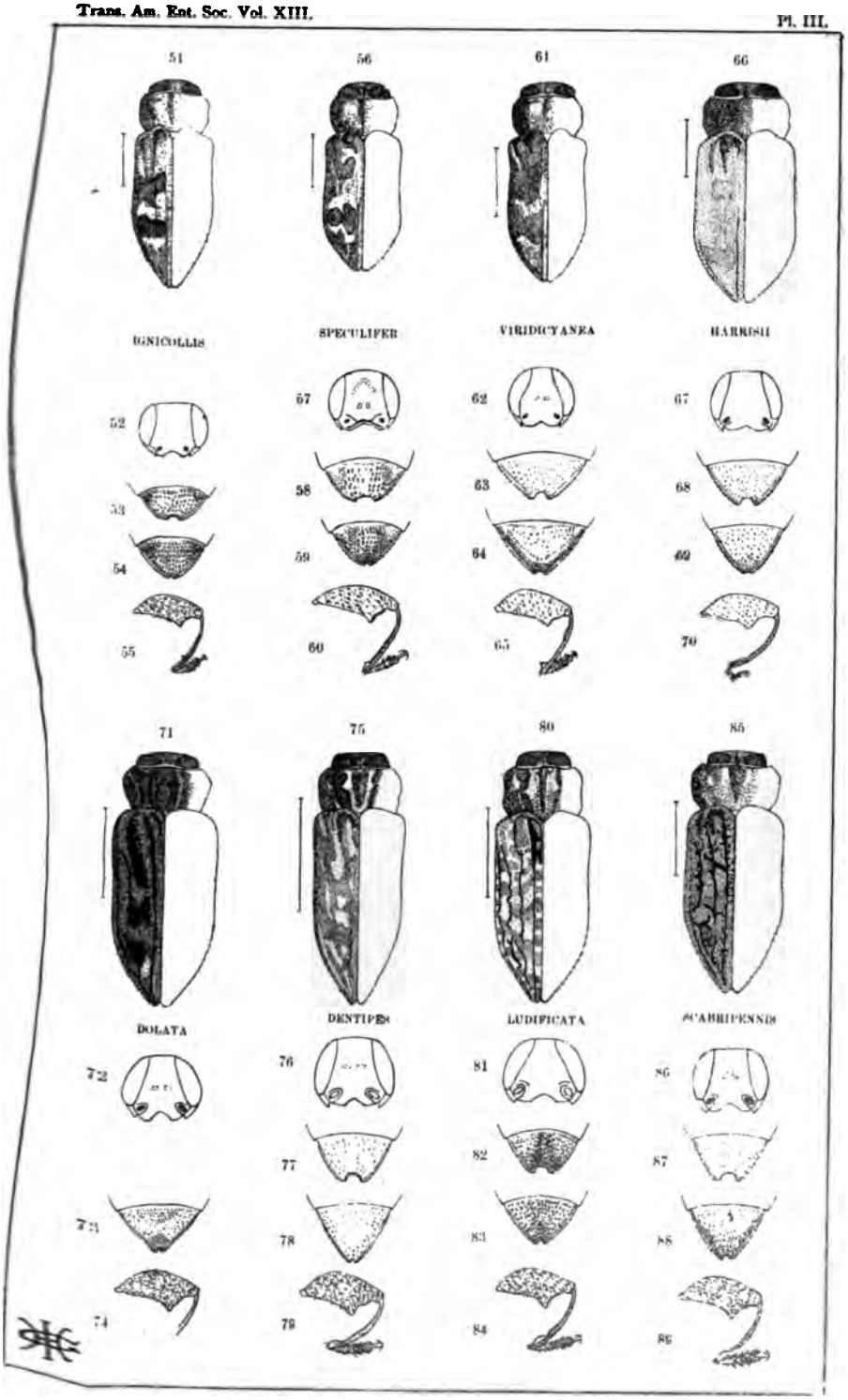
C. interrupta *Say*, has been placed in Metachroma.

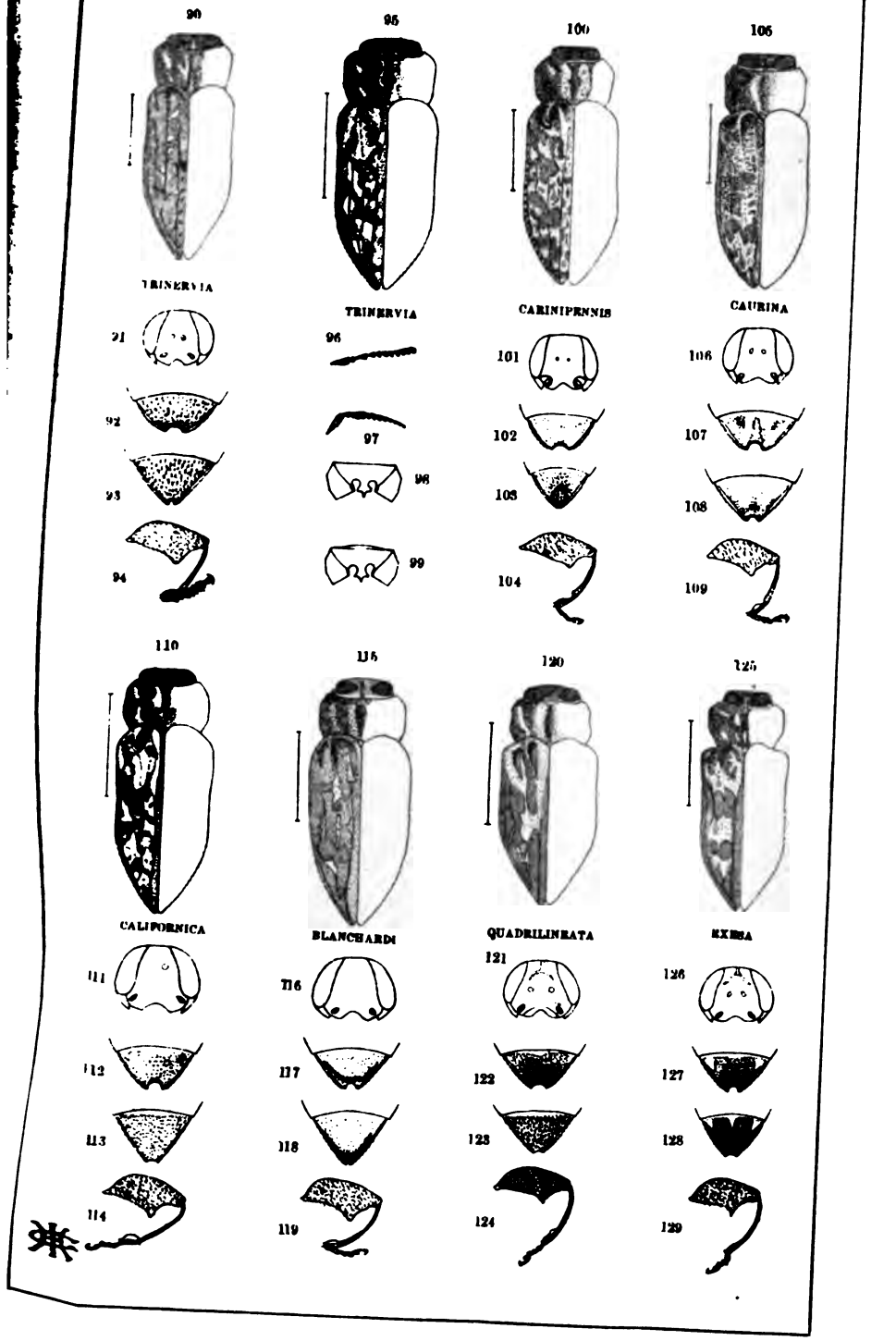
Lefèvre has described a *Typophorus histrio* from our fauna, which seems identical with Say's species. I have not yet had the time to study closely the genera of Eumolpidæ as given by Lefèvre (Mém. Liege xi), but it is possible that *M. californica*, *dubiosa*, *usta* and *interrupta* should go to Typophorus.

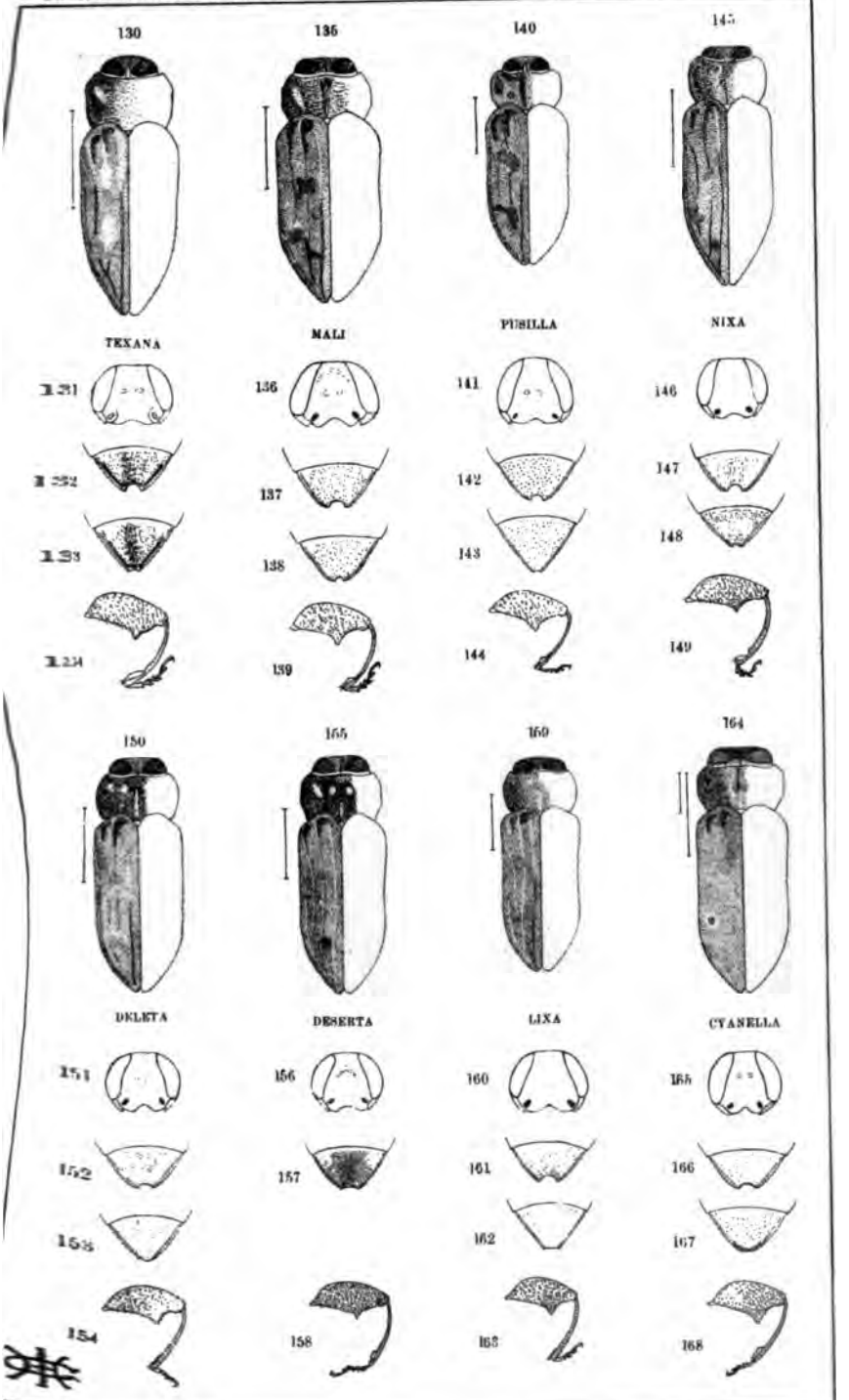
At present is a favorable opportunity for directing attention to the collection of the species or forms associated in our present lists under the name *Colaspis tristis* or *Nodonota*, as it should be called. In the series at present before me at least five forms are clearly separable in those occurring in the Atlantic region. while at least two occur in Arizona. In all the species before me I have observed that the sixth joint of the antennæ is distinctly shorter than either the fifth or seventh.

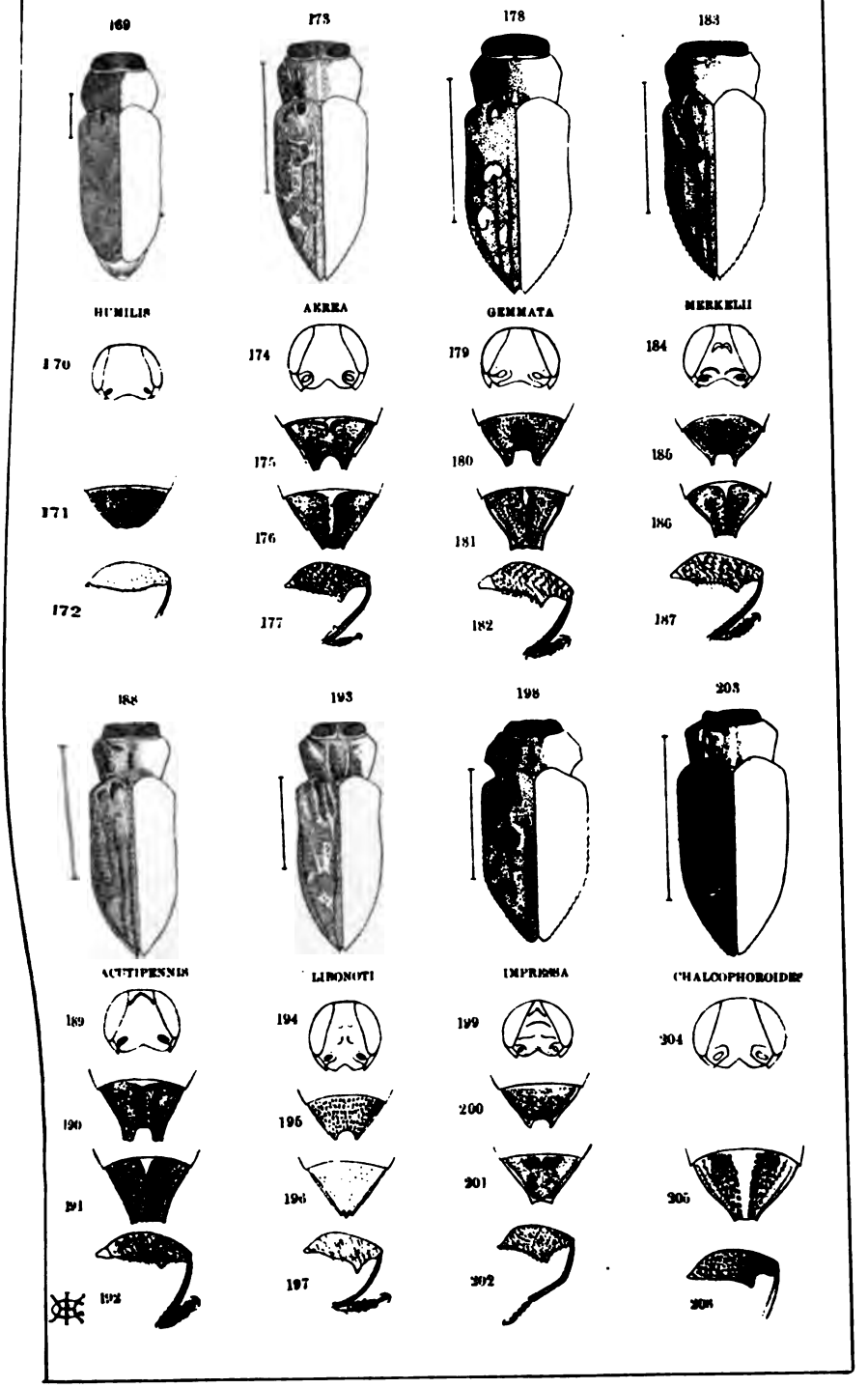
In collecting Nodonota the plant on which they occur should be noted, and as large series from remote regions will be necessary for the proper elucidation of the species I have refrained from greater expression of opinion.

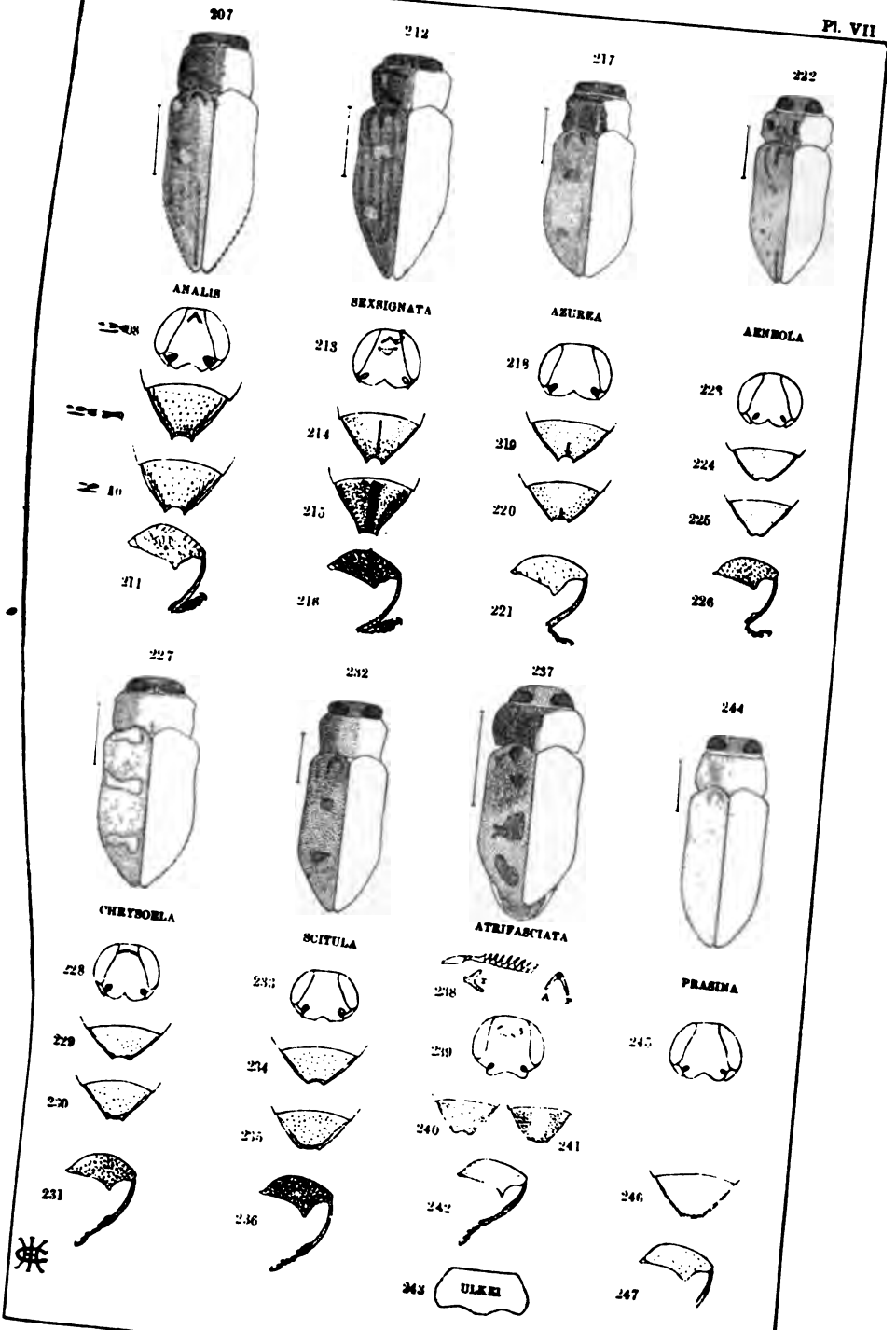

1
6
11
16
20
ATABALIPA
OCTOCOLA
EDWARDSII
DEBILIS
AXILLARIS
2
7
12
16
21
3
8
17
22
4
9
13
18
23
5
10
14
19
24
25
30
35
40
45
BIPUSTULATA
FEMORATA
CONTIGUA
CUPRASCENS
FLORICOLA
26
31
36
41
46
27
32
37
42
47
28
33
38
43
48
29
34
39
44
49
50


51
56
61
66
IGNICOLLIS
SPECULIFER
VIRIDICYANEA
HARRISII
52
53
54
55
57
58
59
60
62
63
64
65
67
68
69
70
71
75
80
85
DOLATA
DENTIPES
LUDIFICATA
SCABRIPENNIS
72
73
74
76
77
78
79
81
82
83
84
86
87
88
89


90
TRINERVIA
91
92
93
94
95
TRINERVIA
96
97
98
99
100
CARINIPENNIS
101
102
103
104
105
CAURINA
106
107
108
109
110
CALIFORNICA
111
112
113
114
115
BLANCHARDI
116
117
118
119
120
QUADRILINEATA
121
122
123
124
125
EXESA
126
127
128
129


130
TEXANA
131
132
133
134
135
MALI
136
137
138
139
140
PUSILLA
141
142
143
144
145
NIXA
146
147
148
149
150
DELETA
151
152
153
154
155
DESERTA
156
157
158
159
LIXA
160
161
162
163
164
CYANELLA
165
166
167
168


169
173
178
183
HUMILIS
AEREA
GEMMATA
MERKELII
170
174
179
184
175
180
185
171
176
181
186
172
177
182
187
188
193
198
203
ACUTIPENNIS
LIBONOTI
IMPRESSA
CHALCOPHOROIDES
189
194
199
204
190
195
200
191
196
201
205
192
197
202
206


207
ANALIS
208
210
211
212
SEXSIGNATA
213
214
215
216
217
AZUREA
218
219
220
221
222
AENEOLA
223
224
225
226
227
CHRYSOELA
228
229
230
231
232
SCITULA
233
234
235
236
237
ATRIFASCIATA
238
239
240
241
242
243
ULKEI
244
PRASINA
245
246
247

Descriptions of new PYRALIDÆ.

BY GEO. D. HULST.

Some two years since I was led to endeavor to make a special study of the *Geometridæ* and *Pyralidæ*. The principal part of the work done by me up to the present time has been in the first family, —but I have been looking somewhat into the *Pyralidæ* and collecting at the same time, and a very considerable amount of material has accumulated, for which I can get no names. That it may be handled and in time classified, is the object of the present descriptive paper. The most of the *Pyralidæ* already described are determined in the different American collections. The National Museum has a very considerable collection by Belfrage, with Zeller's determinations I believe, though, coming through several hands, I am not able to say how much reliance can be placed upon them. Mr. Henry Edwards has some types, and many typical specimens of Mr. Grote, from the Pacific Coast, and his whole collection has had the advantage of Mr. Grote's determination. Prof. Fernald has the advantage of having the most, if not all, of Packard's, Grote's and Zeller's types identified. So, though Mr. Grote's types went to the British Museum, the loss is in part remedied by the possession of typical specimens. A large number of Lederer's, Guénee's and Walker's species have been determined, but quite a large number (almost all of them from the East and South) are yet, after from twenty-five to thirty years, unidentified. Some of them undoubtedly can never be determined. My material described below has been through the hands of our best American specialists, and has come back to me marked or declared "unknown to me." So, making use of the knowledge of others as well as giving faithful study myself, I publish the following as new species.

PYRALIDÆ.

PARÆDIS Grote.

Parædis napæalis *sp. nov.*—Expands 22 mm. Head, antennæ and thorax fuscous cinereous; palpi and abdomen cinereous; fore wings cinereous along outer and inner margins, forming a broad band, fuscous brown along costa and

on central space; costa narrowly blackish, a black line along outer margin, a fine sinuous outer line, black, narrowly edged outwardly with white, in general direction nearly parallel with outer margin; a slight cloud representing the orbicular and reniform spots; fringe black at base, fuscous outwardly; hind wings fuscous, with black marginal line, and extra median line running in a curve from centre of anterior margin to outer margin just before anal angle; beneath much as above, but with lines more diffuse and indistinct.

One ♂, California. A smaller and more slender insect than the other species of the genus, with wings more extended and pointed.

PRORASEA Grote.

Prorasea lepidalis *sp. nov.*—Expands 26 mm. Head, antennæ and palpi fuscous; thorax dark gray above, light gray on sides. Abdomen light gray, annulated with white; fore wings dark fuscous, gray, crossed by two lines, the basal angulated at the middle, the outer spreading at costa, fine on upper middle portion, broader, and with two indentations near inner margin; a subquadrate white spot, concave outwardly and inwardly, between orbicular and reniform; subterminal space white, narrowest towards and not reaching apex; fringe fuscous cinereous, somewhat checkered with black at base; hind wings nearly even fuscous, with faint outer white line; margin ochreous fuscous, fringe cinereous; beneath, color lighter than above, spots and markings more diffuse.

Two ♂ ♂, Colorado, Montana. Nearest *P. indentalis* Grote.

AGLOSSA Latr.

Aglossa gripalis *sp. nov.*—Expands 26 mm. Head and thorax fuscous. Abdomen lighter, fore wings reddish fuscous, somewhat darker between the cross lines; the wings are crossed by two broad reddish ochre lines, the basal curved outwardly, striking the costa at nearly double the distance from the base that it reaches inner margin from base, the outer line making almost a right angle postmedially, and nearer the basal line at costa than at inner margin; hind wings very light reddish ochre; all fringes reddish fuscous; beneath light reddish fuscous, lines scarcely reflected; fringes darker than wings.

Two ♂ ♂, Colorado. Nearest to *A. cuprealis* Hübn., of Europe, of which Zeller says he has received specimens from Texas also.

Aglossa electalis *sp. nov.*—Expands 25 mm. Head, thorax and fore wings dark fuscous; two broad, light ochre lines on fore wings, one extra basal, the other extra discal, both somewhat curved outwardly, and both somewhat confused along edges; fringe fuscous; the dark portion of the fore wings is somewhat striated longitudinally with light ochreous; hind wings white, with a fuscous shade, with faint fuscous median line, and faint fuscous along outer margin; beneath fore wings light fuscous, lines hardly visible; hind wings as above; all wings with a marginal broken line of black.

Two ♂ ♂, Arizona. Much resembling *A. domalis* Guén., in some respects, and perhaps nearest to it.

ASOPIA Tr.

Asopia enniculalis *sp. nov.*—Expands 26 mm. Head light ochre; antennæ pink at base, white at tip; thorax, abdomen and wings reddish ochreous, the hind wings being lighter at base; fringes concolorous, the color of the fore wings is more pronounced along costa, and at tip forming small, almost brick-red spots; fore wings crossed by two fine whitish lines, the basal straight, reaching costa and inner margin at equal distances, about one-fourth length of wing, the outer sinuate, but straight, parallel with outer edge during first half of its course; a submarginal row of black points; beneath, nearly the same as above, somewhat glistening, lighter along inner margin of all wings; dark brown discal spot present on all wings, but no lines apparent.

One ♂, Colorado. Hardly congeneric with *Asopia*.

Asopia occidentalis *sp. nov.*—Expands 28 mm. Head, antennæ, thorax and fore wings olive fuscous ochre; costa of fore wings ochreous; fore wings crossed by two light ochre lines, the basal wavy, but nearly straight, the outer sinuous, both lines spreading at costa; hind wings uniform white, with a faint or strong fuscous shade; beneath, fore wings as above, but lighter; costa and outer edge most shaded; hind wings as above.

Two ♂ ♂, Colorado. Nearest *A. planalis* Grote.

Asopia culiculalis *sp. nov.*—Expands 17 mm. Head, thorax and fore wings ochreous. Abdomen and hind wings fuscous ochreous; there are two light ochre lines on the fore wings, rather near together, wavy, straight in general direction, parallel to each other; beneath, decidedly reddish, the outer lines of the fore wings present, and a whitish line on the hind wings on outer third parallel with outer edge; fringes above fuscous, below ochreous.

One ♂, Florida.

EMPREPES Led.

Emprepes magnalis *sp. nov.*—Expands 28 mm. Head and antennæ light ochreous; thorax very light ochreous, with ochreous dottings. Abdomen white; fore wings ochreous, white posteriorly at base; two fuscous lines, the basal rounded outwardly, but with dentation inwardly near middle, the outer with a sinus outwardly just before middle, and another not so deep near inner margin; the line outwardly, and the outer line inwardly, broadly edged with a white line; a white circular spot on disc; a band of deep ochreous just beyond outer line; subterminal space light ochreous, a line of marginal dentations ochreous; hind wings white, with ochreous shade outwardly and indications of a fuscous median band; beneath, fuscous white; darkest along costa and centrally on fore wings, otherwise nearly white.

Two ♂ ♂ one ♀, Arizona. Nearest *E. novalis* Grote, but very much larger, with differences in details of fore wings, and nearly white hind wings.

SCOPARIA Haw.

Scoparia nimguidalis *sp. nov.*—Expands 26 mm. [illegible]nnæ, thorax, abdomen and wings uniform blackish fuscous, [illegible] bearing

lighter, as being more thinly scaled; on fore wings orbicular and reniform black, and on hind wings a black discal spot; a faint extra basal line on fore wings; below same color as above, with one dark spot on each wing; all fringes a shade lighter than general color.

One ♂, Arizona. Nearest *S. centuriella* S, V., but differing in color, and with wings narrower, more extended and less rounded outwardly.

Scoparia nominatalis *sp. nov.*—Expands 18 mm. Head, antennæ and thorax dark fuscous; antennæ at the tips and abdomen fuscous cinereous; fore wings dark fuscous, broken with cinereous scales, a whitish basal line, rather broad, curved evenly outward, and a whitish extra median line, rather broad, sinuous, bent very much just below middle; a subquadrate cinereous spot between reniform and orbicular, and a subterminal cinereous line with a sinus inwardly near middle; fringe cinereous, broken with black at base; hind wings fuscous, margin darker; beneath, fore wings uniform fuscous; hind wings lighter, with indications of an extra median band near anterior margin.

One ♂ two ♀ ♀, Vancouver Island.

Scoparia refugalis *sp. nov.*—Expands 20 mm. Very much as the preceding species, but with color of head, thorax and wings lighter; basal line black, wavy, lined inwardly with cinereous, outer line whitish, nearly straight, with slight inward sinus near costa; marginal line cinereous; beneath, as preceding species.

Two ♂ one ♀, California.

CHALCŒLA Zell.

Chalcœla gemmalis *sp. nov.*—Expands 15 mm. Head brown, palpi brown, fringe in front; thorax and basal portion of fore wings rich golden-brown; fore wings beyond light ochre, with fuscous shadings; margin yellowish brown, fringe black; near middle of wing, also just within indicated extra median line, and also on subterminal space at middle, is a velvety black spot, the three being in a row; a fine black line runs from costa to middle spot; there is also midway along costa a faint subcostal black spot; each of all these spots surrounds a few bright golden metallic scales; there is also a line of metallic gold basally along costa; hind wings nearly even, fuscous; beneath, fuscous with a golden tinge, a white spot on costa at beginning of outer line, which is indistinct; an outer cinereous line on hind wings; all margins with whitish lines; fringes fuscous.

Two ♂ ♂, Sierra Nevada Mountains, California. The second specimen has the golden-brown of thorax and fore wings replaced with fuscous.

BOTIS Schranck.

Botis roseopennalis *sp. nov.*—Expands 18 mm. Head above white, in front bright rosy; antennæ yellow, rosy at base; palpi rosy above, white below; thorax rosy, yellow at shoulders; fore wings clear canary-yellow; costa for two-thirds from base bright rosy, connecting with an outer band of same color, this

merging at inner angle with a broad marginal band of the same color also; hind wings white; beneath, marked as above, the yellow replaced with white, the rosy hue with the same color, much duller, however, and more diluted.

Two ♂ ♂, North Carolina, Arizona. Near *B. laticlavia* G. & R.

Botis bellulalis *sp. nov.*—Size of *B. diffissa* G. & R., and quite likely a variety of that species, but it differs as follows: the palpi are fuscous, not ochreous; the thorax and abdomen are fuscous, with a vinous tint, not bright vinous red; the fore wings are dull vinous fuscous, without yellow basal band or yellow discal spot; the hind wings are dull vinous fuscous; beneath, the color is dull vinous, with only faint indications of the outer band.

One male three females, Texas.

Botis bububattalis *sp. nov.*—Expands 17 mm. Head very dark fuscous, palpi fuscous; thorax and abdomen dark fuscous; fore wings dark maroon-brown with a white line just within the middle, and another one at margin, both parallel with outer edge; two small extra median spots just before the middle of wing, also a bidentate fine yellowish line just before and reaching inner margin; hind wings dark fuscous, fringes lighter; beneath, dark fuscous, fringes lighter.

One ♂, Colorado. Allied to *B. volupialis* Grote.

Botis psychialis *sp. nov.*—Expands 14 mm. Antennæ, thorax and abdomen light ochreous; front white; between the antennæ, and at summit of thorax, and on fore wings rich yellow; fore wings crossed by two white lines, the basal straight, the outer bent outwardly above middle; a white basal spot and white basally along inner margin; margin fuscous, fringes fuscous at base, cinereous outwardly; hind wings whitish, a faint fuscous median band and margin, and fringe fuscous; beneath fuscous, outer line and veins beyond line light fuscous.

Two ♀ ♀, Georgia, Texas. Though much differing in color this seems to be best placed in the *diffissa* group.

Botis rogatalis *sp. nov.*—Expands 19 mm. Palpi, head, thorax and abdomen fuscous; fore wings broken fuscous and fuscous cinereous; the basal space with a black spot medially, two white lines cross the wings, the first extra basal edged with dark fuscous, the outer after the typical *Botis* pattern; a dark brown spot annulate with white at reniform; a dark brown subtriangular apical patch, and a subterminal white line; marginal line black, broken; hind wings, even fuscous; beneath, lighter, lines obsolete, reniform indistinct.

One ♀, Texas.

Botis hariolalis *sp. nov.*—Expands 18 mm. Head, body and wings dark blackish fuscous; the fore wings are crossed by two broad pure white lines, the first straight, the outer after the *Botis* pattern, but with the sinus very deep and much extended posteriorly; the two lines closely approximate at inner margin; costa white near apex; fringe white just below apex and at posterior angle, otherwise concolorous with wing; hind wings white at base, with a rather broad intramedian white line nearly straight extending across wing, and an outer white line not reaching either margin and hardly passing middle posteriorly; fringes white, interlined with black; beneath, as above.

One ♂, Florida. Allied to *B. adipaloides* G. & R., though very different in ornamentation.

Botis offumalis *sp. nov.*—Expands 18 mm. Palpi and head dark fuscous cinereous; antennæ black; thorax and abdomen dark fuscous: fore wings fuscous, shaded with black; a black basal dash; orbicular and reniform black; beyond reniform a lighter fuscous spot; two fine black lines cross the wings, the first sloping obliquely outward, the outer after the *Botis* pattern, merging behind reniform with the first, and extending with it in a dark cloud to inner margin; subterminal space fuscous, inclosing dark fuscous shading; marginal line of dentate black spots; hind wings dark fuscous with a central row of lengthened black points and a dark fuscous broad marginal band; beneath, light fuscous; lines and bands obsolete, orbicular and reniform indistinct.

One ♀, San Diego, California.

Botis lulualis *sp. nov.*—Expands 26 mm. Head, thorax and abdomen clear black, intermingled with white scales, giving, especially on posterior segments of abdomen, a cinereous appearance. Abdomen annulated with white between segments, white on sides; fore wings bright black, intermingled at base, except medially with white scales, giving a cinereous appearance; a white basal line twice angulated outwardly; orbicular and reniform black, the latter edged inwardly with a whitish crescent; on the extra median space the black is much mingled with white scales, forming a broad cinereous band which outwardly encloses a fine, sinuous, finely dentated black line; hind wings black on basal third; central space pure white, oval, enclosing outwardly a line of black points; a broad black marginal band; beneath, with basal space and margin black on all wings, black on central space of fore wings, black discal points; the rest smoky white; the hind wing has the row of black points repeated.

Two ♂ ♂, California, Anticosti Island. Allied to *B. flavinotalis* Grote.

Botis nexalis *sp. nov.*—Expands 18 mm. Head and thorax above black; palpi, basal two-thirds of costa and sides of thorax fulvous brown; rest of wings and abdomen dark fuscous; the fore wings are crossed by two white hair lines, the basal (not reaching costa) zigzag, with two large dentations outwardly, the outer starting at costa, where it broadens some, and further out than usual, crosses to inner margin with a much smaller sinus than usual; reniform round, orbicular lengthened, quadrate, constricted at middle, reaching obliquely backwards half across the wing, both edged with white hair lines; that of reniform almost coalescing with outer cross line; submedian vein dotted with white on median space; marginal line white; fringe fuscous; beneath, a shade lighter than above, the outer line present on both wings, and a marginal row of narrow spots on all wings.

One ♂, Sierra Nevada Mountains, California. May be placed near *B. lethalis* Grote.

Botis salutalis *sp. nov.*—Expands 18 mm. Head, body and abdomen ochreous fuscous; eyes edged with white. Fore wings ochreous fuscous, crossed by two white hair lines further out, more approximate than usual, and parallel with each other; both are angulated below costa, then wavy to inner margin; hind wings shading from color of fore wings outwardly, to very light at base;

an outer white line apparent near anal angle; fringes white at base, fuscous outwardly; beneath, fuscous; a white spot at costa of fore wings; margin dark fuscous.

One ♂, Oregon. Near the preceding species.

Botis venalalis *sp. nov.*—Expands 22 mm. Palpi fuscous; antennæ somewhat lighter; head, thorax, abdomen and wings smoky bone white; the lines of the fore wings fine, fuscous, the basal forming a right angle just below costa, then running straight across; the outer forming a right angle one-fourth out, then running nearly straight to margin, and continued with some waviness across hind wings; all wings with fuscous marginal lines; fringes very light; beneath, dirty squammose fuscous; outer line as above, but broader; marginal line present as above.

One ♂, New York. This and the next three species may be placed near *B. marculenta* G. & R., although the above is in some respects aberrant.

Botis pilalis *sp. nov.*—Expands 23 mm. Palpi, vertex and shoulders ochreous; thorax and fore wings ochreous yellow; basal line fuscous, broad, nearly straight; outer line same color, after the *Botis* pattern, but at the angle of the great sinus met by a line from the costa, curved, crossing dark reniform spot and inclosing with sinus a nearly circular space; orbicular present; a faint subterminal fuscous line parallel with outer edge; margin darker than ground color; hind wings light ochreous outwardly with fuscous outer line; also faint subterminal shading of same color; beneath, light ochre, lines much as above; subterminal and marginal lines of fore wings more pronounced.

Two ♂ ♂, Indian River, Florida.

Botis confovealis *sp. nov.*—Expands 23 mm. Palpi fuscous; breast pure white; thorax ochreous in front, fuscous behind. Abdomen fuscous. Fore wings even ochreous, a little deepened along costa; outer line very faintly apparent near middle of wing; hind wings white; faint fuscous outwardly; beneath, light ochreous fuscous, outer line very faint; hind wings a little lighter than fore wings.

Two ♂ ♂, Texas.

Botis pergilvalis *sp. nov.*—Expands 26 mm. Pale yellow, with ochreous shadings, especially along the costa; lines much as in *B. pilalis* above, though they are not so dark, and the wings are much broader; hind wings pure glistening white, a little fuscous outwardly, and with fuscous outer line, but no subterminal shading.

Three females, Arizona. Very near to *B. dasconalis* Walk., and *B. coloradensis* G. & R. This and the latter may both be varieties of the *B. dasconalis* Walk.

Botis gracilalis *sp. nov.*—Expands 23 mm. Pure white; fore wings very narrow and extended; an ochreous tinge along costa; bands fuscous, both somewhat interrupted, the outer nearly parallel with outer margin; a fuscous shading in middle field; hind wings with subterminal fuscous band; marginal line on all wings, fine black, interrupted between veins; beneath, pure glistening white.

Two ♀ ♀, Texas.

Botis hædulalis *sp. nov.*—Expands 23 mm. Fore wings fuscous, very thinly scaled; basal line broken into dots; outer line fine, sharply and strongly dentate, and after the *Botis* pattern; orbicular and reniform black; marginal line fine, black; hind wings pale fuscous pellucid; beneath, same color as above, with lines faintly reflected.

One ♂, Texas. Seems to be near the preceding species.

Botis gyralis *sp. nov.*—Expands 26 mm. Head, palpi, antennæ, thorax and fore wings ochreous fuscous; fore wings somewhat striated with light ochreous; of the latter color also is a somewhat triangular discal spot, base outward, beyond which and beyond reniform is a lunule of the same color; an outer cross line of the same color, not reaching costa; a marginal fuscous line, somewhat indistinct; fringe fuscous ochreous; light ochreous at base; hind wings light ochreous, with fuscous shadings; pellucid towards base; a discal spot apparent; also outer dentate cross line; margin fuscous; fringe light ochre; beneath, fuscous, with an ochreous shade on centre of fore wings; outer lines present; hind wings lighter, nearly or quite white at base.

Three males and one female, New York, Colorado, Nova Scotia. Near *B. opilalis* Grote.

Botis invinctalis *sp. nov.*—Expands 26 mm. Head, antennæ, palpi and thorax smoky fuscous; wings white, evenly washed with light fuscous; fore wings with inner line close to base, indistinct, broken; outer line represented by a sinuate row of indistinct points; orbicular a fuscous spot annulated with black, rather large; reniform large, extending to costa, and forming a spot of fuscous and black; three black costal dots beyond apex; margin with prominent black spots; marginal row of black spots on hind wings; beneath, considerably fuscous; spots indistinct; a submarginal and marginal row of black points, distinct.

One ♂, Washington Territory. Nearest to *B. turmalis* Grote, but apart from color differences, the wings are much broader than in that species.

Botis labeculalis *sp. nov.*—Expands 20 mm. Palpi fuscous; head and antennæ fuscous ochreous; thorax and abdomen light ochreous; fore wings ochreous yellow; subterminally and at costa with brownish tinge; basal line slightly curved, wavy; outer, of the usual pattern; orbicular black; reniform black, lengthened, nearly or quite reaching outer line at median angle; marginal line brown; fringe fuscous; hind wings white at base, light ochre outwardly; outer line present, very strongly sinuate outwardly at middle; a faint subterminal fuscous band; marginal line and fringes as on fore wings; beneath, smoky light ochre; fringes fuscous; line reflected through.

One ♀, Arizona. Close to *B. flavidalis* Guén.

Botis levalis *sp. nov.*—Expands 30 mm. Rather bright yellow; costal space brown; basal line brown, nearly or quite obsolete posteriorly; orbicular black; reniform a yellow space surrounded with dark brown line, lengthened quadrate in shape; outer line faint, clear near costa; subterminal space brown, widening near costa, sometimes obsolete posteriorly; hind wings yellow; discal spot prominent; cross line faint, quadrately bent; marginal line brown, especially prominent and broad at outer angle; beneath, as above, but much more indistinct.

Two ♂ ♂ two ♀ ♀, Indian River, Florida, California. The one specimen from California is somewhat more heavily marked with brown, and varies some in the direction of the outer lines, but is, I think, conspecific with the Florida specimens. The species belongs to the *flavidalis* group.

Botis octosignalis *sp. nov.*—Expands 20 mm. Head, palpi, shoulders and antennæ light ochreous. Abdomen white; fore wings light ochreous; costal space and markings buff; basal line rounded, outer line sinuous, both even, without dentations; orbicular obsolete, reniform like a lengthened figure 8, sometimes solid; a faint subterminal fuscous shading; marginal line fine, buff; hind wings white, faintly ochreous outwardly; marginal line fine, brownish; beneath, nearly uniform white.

One ♂ two ♀ ♀, California, Texas. Seems to be near *B. citrina* G. & R.

Botis succandidalis *sp. nov.*—Expands 22 mm. Head ochreous; palpi ochreous above, white below; antennæ dark ochreous; thorax and abdomen light ochreous; fore wings light cream-white, without any markings; hind wings white, with a fuscous shading outwardly; fringes white; beneath, fore wings fuscous, hind wings white; all fringes white.

One ♂, Black Hills, D. T. Probably not rightly placed in *Botis*, as the clypeus has a somewhat prominent cylindrical tubercle, flat on end.

Botis festalis *sp. nov.*—Expands 30 mm. Head, thorax and fore wings reddish ochreous; hind wings of same color, but thinly scaled and pellucid at base; all wings without markings; beneath, as above, smoother, and a shade more ochreous.

Two ♀ ♀, Arizona. Closely allied to *B. reversalis* Guén.

Botis uxorculalis *sp. nov.*—Expands 24 mm. Head, thorax and fore wings dark violet brown. Abdomen and hind wings fuscous brown; fore wings with the usual lines, white, fine, the outer broadening to a white patch at costa; hind wings with outer line fine, not much bent, and not reaching anal margin; orbicular and reniform on fore wings, indistinct black, the latter annulate; beneath, dark fuscous; hind wings light towards base, and fore wings along inner margin; lines well marked, broader than above, but not so definite; orbicular and reniform distinct on fore wings; discal spot on hind wings; all blackish.

Three males, Sierra Nevada Mountains, California. In some specimens the lines are broader and the violet color is lost. Near *B. niveicilialis* Grote.

Botis obnigralis *sp. nov.*—Expands 25 mm. Dark squammose fuscous; orbicular and reniform dull black; a subquadrate, dull white, spot between; no inner line; a white outer band, waved, but nearly parallel with outer margin; border fuscous, whitish, inclosing broken black marginal line; hind wings with a central whitish space, border as in fore wings; beneath, lighter; spots prominent, band dull, costa whitish; hind wings whitish.

One ♂, Sierra Nevada Mountains, Cala. Near *B. subolivalis* Pack.

Botis thrallophilalis *sp. nov.*—Expands 24 mm. Head, antennæ, palpi above, thorax and fore wings rich dark brown; palpi, thorax and abdomen below white, or light ochre. Abdomen above very dark brown; lines on fore wings black, fine dentate; the outer nearer margin than usual; outer space darker, with veins lined with black; orbicular and reniform black; hind wings brown, becoming black along border; beneath, light brown; outer line apparent; veins on outer space of fore wings blackish; margin blackish, somewhat broken between the veins; hind wings with discal point and marginal row of black points.

Two ♀ ♀, California, Montana. Seems to be allied to *B. badipennis* Grote.

Botis monnialis *sp. nov.*—Expands 28 mm. Fuscous throughout. Abdomen annulated with white; fore wings on basal and middle fields mixed with lighter fuscous; orbicular and reniform indistinct, space between light ochreous, outer line light ochre, very fine, but enlarging subcostally into two decided spots, and again at inner margin; outer space dark fuscous; hind wings lightening towards base; outer line evident, showing white spots in middle; beneath as above, but lighter; lines more distinct; hind wings much cinereous towards base; fringes above and beneath fuscous on fore wings, cinereous to fuscous on hind wings.

Two ♂ ♂ one ♀, Sierra Nevada Mountains, California. Belongs near *B. erectalis* Grote.

Botis immaculalis *sp. nov.*—Expands 32 mm. Front fuscous ochreous; palpi lighter; fore wings above and below dull white, faintly tinged with fuscous; hind wings nearly white above and below; all wings with fuscous shading at margin very light; no spots, lines or bands.

Two ♀ ♀, Montana. Allied to *B. vacunalis* Grote.

Botis fumoferalis *sp. nov.*—Expands 32 mm. General color blackish fuscous; markings on wings as in *B. erectalis* Grote, but with all parts much darker; submarginal band on all wings nearly black; marginal line black, interrupted by the dark fuscous veins; beneath, dark cinereous on basal and middle spaces to beyond outer cross lines; dark fuscous outwardly; margin black, with lighter points at end of veins; hind wings dark cinereous; margin as on fore wings.

Three males one female, California, Arizona. This is very near in markings to *B. erectalis* Grote, and is likely the Western form of that species.

Botis oblectalis *sp. nov.*—Expands 30 mm. Palpi, head, thorax and wings generally smooth, even ochreous fuscous; tongue and maxillary palpi white. Abdomen posteriorly fuscous, annulated narrowly with white; fore wings fuscous along costa at base; lines fuscous, the first rounded, the outer sinuous, not much bent, very oblique; outer margin fuscous brown; orbicular and reniform present, small; fringe nearly black, with a space just before middle of wing and another just before outer angle where the outer two-thirds of the fringe is pure

white; hind wings lighter along inner margin and basally, with dark marginal line; fringe light cinereous, dark fuscous at middle; beneath, as above, somewhat lighter in ground color, but with same markings.

Two ♂ ♂, Arizona. Unlike any species I know of, and perhaps not a *Botis*.

Botis scurralis *sp. nov.*—Expands 28 mm. In general coloration like *B. perrubralis* Pack., but differing as follows: In *perrubralis* the ground is yellow washed with red, and there are two fine red cross lines. In this species the ground color is even canary yellow, and this color is immaculate, save by the faint discal spot. In *perrubralis* the outer band is bright reddish brown, being darker next to median space; the costa is edged with the same color; there is a broken yellow marginal line, and the fringes are dark reddish brown. In *scurralis* the outer band is clear pink, uniform; the costal band is of the same color, and is much broader than in *perrubralis*. There is no marginal line; posteriorly there is a fading of the pink into a broad subterminal band, and the fringe is fuscous, becoming yellow posteriorly. In *perrubralis* the band on the hind wings extends only two-thirds across the wing and in my specimens ends abruptly and is reddish fuscous. In *scurralis* it generally reaches anal angle and fades posteriorly along margin into light ochreous. These differences in part hold good for the under side.

One ♂ two ♀ ♀, Arizona. The species are nearly related, and *scurralis* may be a variety, but it holds its own in Arizona, and I have seen no tendency to intergradations.

Botis gulosalis *sp. nov.*—Expands 34 mm. Palpi brownish; head ochreous fuscous; thorax fuscous, much lighter posteriorly. Abdomen fuscous, somewhat annulated with white, very light on first two segments; an anal tuft fuscous at base, light ochre at extremity; fore wings fuscous, somewhat iridescent; a median basal spot; a white subcostal line reaching out from base nearly half the length of wing; orbicular and reniform present, with white space before, between and following them; an outer black line, sinuous, edged outwardly with whitish, which is broken into rather large spots by the blackish veins, each of these spots dentate outwardly and there edged with black; two corresponding spots within the outer line in the bottom of sinus; apex ochreous, rounded; margin black; fringe light fuscous, white at outer angle; hind wings semi-hyaline with basal line angulated at middle; outer and submarginal lines very dentate; all lines fuscous, submarginal space with an ochre shading; margin black, fringe white; beneath generally lighter, but with a broad, dark, fuscous, marginal band.

One ♂, New York. This insect is not properly a *Botis*, but like a few above, and some to follow. I can find no satisfactory home for it in any genus after a study of Lederer and other systematists. In many cases I have not been able to make a complete examination, in view of the scarcity of material, and the fact that, very unfortunately, much of it is not my personal property.

EURYCREON Led.

Eurycreon aureolalis *sp. nov.*—The size and markings of *E. chortalis* Grote, but with the fore wings bright, smooth, deep golden yellow, and the hind wings yellow fuscous; beneath, with orbicular and reniform evident, and outer and marginal lines on all wings; color of wings yellow fuscous; lines fuscous.

One ♂, Arizona.

STENURGES *Led.* (*Agathodes* Guén.)

Stenurges floridalis *sp. nov.*—Expands 31 mm. Palpi dirty whitish; head same color in front; white between the antennæ and along eyes in front; thorax white; patagiæ dirty yellow. Abdomen, first segment white, the next reddish brown above, edged behind with white, then olive-brown, slightly annulated with dark brown at segments; blackish anteriorly on sides; fore wings with costa narrowly white; a broad mixed pink and brown-red band starts from inner margin at middle and runs straight to costa, striking it two-thirds distance out from base, and there meets and merges with a similar band from centre of outer margin; these lines are edged with a fine metallic silver line; field within the line basally, and apical space dirty olive; space at outer angle ferruginous; at base in olive space is a dark fuscous dash; fringe wine red towards apex, whitish posteriorly; marginal line white, fine; outer border not angulated; hind wings pale fuscous, with an ochreous reddish tinge; beneath, pale dirty fuscous; legs pure white.

One ♂, Indian River, Florida. Near *S. monstralis*, Guén.

MEGASTES Guén.

Megastes cœligenalis *sp. nov.*—Expands 40 mm. Palpi and front dull ochreous; vertex yellow, white between antennæ and eyes; thorax and abdomen fuscous, lighter dorsally; fore wings fuscous hyaline; costa and base fuscous, the costa, within edge, black, especially near middle of wing; a fuscous olive broad intra-medial band oblique; orbicular and reniform prominent, annulate; space beyond band thinly fuscous, almost hyaline; a narrow shading running from orbicular to anal angle and a costal apical line soon returning beyond itself to costa near apex; outer margin somewhat falcate, sinuous, angulate at middle; hind wings shining semi-hyaline; angulate at middle of anterior margin; this angle and at the outer angle dark brown; two faint submarginal cloudings near apex; margin blackish; beneath, semi-hyaline; orbicular and reniform distinct; two outer dark lines on fore wings, and apically on hind wings; margins brown; legs cinereous fuscous.

One ♂, Indian River, Florida. Near *M. grandalis* Guén.

OROBENA Guén.

Orobena reluctalis *sp. nov.*—Expands 16 mm. Labial palpi ochreous brown, white at tip; maxillary palpi quite prominent, white; clypeus swollen, ochreous at top, white below; vertex white; collar white; patagiæ edged with white, otherwise with the thorax golden ochreous; abdomen ochreous, rather broadly annulated with white; fore wings golden, with a brownish shade; two

white lines, the first intra-median, rather broad, reflected at a right angle near costa, then straight across wing; the outer finely edged inwardly with brown, beginning at costa just beyond first line, running straight towards outer edge, but just before reaching it turning and crossing parallel to outer margin; beyond outer line at apex yellow; marginal line smoky cinereous, inclosing a row of subobsolete black points, the one at apex being most distinct; fringe cinereous, ochreous at base; hind wings white, washed with fuscous ochreous towards outer margin; beneath, light fuscous, with an ochreous tinge; lines faint, except marginal line, which is distinct, black.

Two males three females, Arizona.

Orobena castanealis *sp. nov.*—Expands 16 mm. Palpi dark fuscous; head dirty cream ochreous; clypeus quite prominent; antennæ, thorax, abdomen and wings light castaneous; patagiæ edged with dirty cream white; fore wings with cream white line close to base, running obliquely outward to inner edge; a median cream white band, bifid at costa, inclosing light castaneous triangular space; hind wings washed at middle and outwardly with fuscous, this, however, not reaching margin; marginal border light castaneous; beneath as above, but duller; lighter band hardly reflected; washed with fuscous medially on all wings.

One ♂, Texas.

Orobena subcitrinalis *sp. nov.*—Expands 18 mm. Fore wings light yellow to cross line, more ochreous beyond; one cross line, broad, dark, reddish brown, extra median, broadest at inner margin, broadly separated from costa, edged inwardly with white; hind wings white at base, washed with fuscous ochreous outwardly, the color somewhat pronounced on veins; beneath, color as above, but with cross line very faint.

One ♂, Arizona.

Orobena seminivealis *sp. nov.*—Expands 18 mm. Palpi, head, thorax, abdomen and basal half of fore wings snow white; a broad, dark brown, median cross line, angulated outwardly just before middle, otherwise nearly straight; beyond angulation and merged with it is a round black spot, sometimes white within; outer space fuscous white, slightly washed at points with yellow; a marginal row of black points; fringes white; hind wings pure white, washed with fuscous outwardly; beneath, fore wings fuscous white; line and spot faint; hind wings white, with a faint fuscous tinge.

One ♀, Arizona.

GLYPHODES Guén.

Glyphodes alitalis *sp. nov.*—Expands 28 mm. Palpi dark brown, orange near base; front white, with a fine middle line orange ochreous; thorax orange ochreous, with white dorsal line; patagiæ lined with white. Abdomen ferruginous orange anteriorly; on the sides checkered with white; posteriorly fawn, last segment dark brown; fore wings orange ochreous, narrowly white at base; a small white spot just beyond along inner margin; inner line curved, running obliquely outward, hyaline at middle; a large intra-median hyaline spot, oval, edged with white at costa and at inner margin; another large hyaline spot be-

yond and half including reniform, edged at costa with white; outer line near margin and parallel with it, white, dentate and heavy near costa, broken medially and posteriorly; an outer apical dark cloud and a white marginal line not continued to apex; all white and hyaline spots and lines very narrowly edged with dark brown; hind wings hyaline to fuscous, inner edging of outer white cross line somewhat ochre-clouded anally; cross line edged on both sides with fuscous; outer space ochreous, clouded with fuscous near the margin: just within the margin light ochre; marginal line black, very fine; fringes all orange at base, whitish outwardly; beneath, fuscous; hyaline spots as above; white, obsolete, except a costal apical spot, marking end of outer line on fore wings.

Three males two females, Florida, Texas.

EUDIOPTIS Hübn.

Eudioptis oratalis *sp. nov.*—Expands 32 mm. Palpi fuscous ochreous; head ochreous, the front below with a bunch of hairs with enlarged mass on end; thorax and all wings rich golden yellow, rather thinly scaled. Abdomen yellow fuscous; fore wings crossed by two fine fuscous lines; the basal nearly straight, the outer much after the *Botis* pattern; a dark brown discal spot with scales somewhat raised; fringe fuscous at base, lighter outwardly; hind wings with one line; extra median continued from that of fore wings; a faint fuscous subterminal line; fringe as on fore wings; beneath, light fuscous yellow, iridescent, the markings of the upper side faintly reflected.

One ♂, Louisiana.

DESMIA Westw.

Desmia confusalis *sp. nov.*—Expands 28 mm. Head and body generally dirty fuscous; antennæ with a very prominent nodule on the inner side, about one-third distance out, convex on outer side, hollowed out on inner, with no vestiture; collar a distinct ruff, rising to an edge; wings dirty fuscous, somewhat vitreous; fore wings with a darker cloud on the outer third towards middle, and at anal angle; a basal and outer black line, both irregular and much dentated; a marginal line of triangular black spots; orbicular annulate, as also reniform; a small black spot at middle of basal field, and another at middle of inner margin; hind wings with dark marginal band; faint indications of outer line; the rest semi-hyaline fuscous; beneath, shining light fuscous, lines faint. Legs fuscous; fore and middle tibiæ very short, very heavily edged with hairs inwardly.

One ♂, Indian River, Florida. To me a very remarkable insect. Its coloration is rather aberrant for this group; it is certainly not a *Desmia*, though nearer that than any other American genus; its antennæ would place it close to *Pycnarmon* Led.; its legs might make it congeneric with *Antigastra* Led. If I had arrived at the point of genus making, this with several others would give a fair field for effort.

ZINCKENIA Zell.

Zinckenia perfuscalis *sp. nov.*—Expands 28 mm. Whole insect generally uniform very dark fuscous, nearly black; tongue white; antennæ nodose a little out from base, then strongly curved; antennæ black at nodule and base. Abdomen annulate with fine white; fore wings with two fine light fuscous lines; the first straight, the outer continued on hind wings as well, after the *Botis* pattern; orbicular and reniform revealed by light spot between, and light crescent beyond; just at base is a large costal fold on upper surface, reaching to beyond basal line, light fuscous underneath it; beneath, shining cinereous fuscous; lines faintly apparent; legs and body light cinereous, except fore tibiæ, which are nearly black on lower half.

One ♂, Florida. Another aberrant species, perhaps more properly placed in the genus *Ceratoclasis* Led.

ISOPTERYX Guén.

Isopteryx xeniolalis, *sp. nov.*—Expands 14 mm. Palpi, head and antennæ ochreous; wings clay white; fore wings with costa blackish, except towards apex; two black points near base representing a basal line; an intramedian line broken at middle; an extra median line, oblique, sinuous, not reaching costa; an outer line, also sinuous, crossing the wing; a subterminal shade connected with margin with a black dash at middle of wing; margin and fringe black, the latter light at base; hind wings with three black lines, median, extra median, and subterminal; the first straight, heavy; the others fine, sinuous; margin black; fringe light, somewhat interlined with black; beneath, as above, lines fainter and more indeterminate.

One ♂, Texas.

HYDROCAMPIDÆ.

HYDROCAMPA Guén.

Hydrocampa gyralis *sp. nov.*—Expands 19 mm. Palpi fuscous ochraceous; front white; vertex, thorax, abdomen and fore wings fuscous ochraceous; patagiæ edged with white. Abdomen broadly annulated with white; fore wings with basal line; dark brown, straight, but swollen on outer margin before middle, edged on both sides with white; extra median costal patch, white, ochreous within, edged with a sinuous black line, and that outwardly with white; patch along inner margin dark fuscous, edged outwardly with white; this patch is rounded anteriorly, then constricted, then broadens on both sides to inner margin; a subterminal white line; margin black; fringe fuscous ochraceous, brokenly edged at ends with white; adjoining all white parts the fuscous color of the field is rather deepened; hind wings white at base, fuscous ochraceous outwardly; a double median black line not reaching anal margin; a subterminal line of white; margin black; fringe fuscous, edged at ends with white; beneath, light fuscous, markings faintly reflected.

Two ♂ ♂, Georgia, Florida. Near *H. genuinalis* Led.

EPIPASCHIÆ.

TORIPALPUS Grote.

Toripalpus taleolalis *sp. nov.*—Expands 25 mm. Head, thorax, abdomen and hind wings fuscous; fore wings even fuscous, with a cinereous tinge, the first cross line black, double, somewhat curved outward, slightly angulated within inner margin; basal field with a black band just inside the line; outer line close to margin, with an ante-median sinus, and another just before inner margin, the line faintly edged outwardly with white; one small whitish spot at centre of basal field, three on middle field, two ante-median, one post-median; marginal line black; beneath, fuscous, with indistinct outer line on all wings.

One ♀, Colorado. Allied to *T. trabalis* Grote.

Tetralopha enthealis *sp. nov.*—Expands 27 mm. Palpi and vertex fuscous brown; front coppery fuscous. Abdomen light fuscous; thorax and fore wings light ochreous; heavily marked with blackish fuscous, the whole washed with coppery red; the fuscous generally covering basal and middle spaces, leaving two lines of coppery ochreous; the first strongly angulated outwardly at the middle, the second beginning in a quadrate spot at costa, thence running zigzag with sharp dentations across to inner margin in general direction parallel with outer margin; outer space lighter than middle field; a row of marginal spots; fringe reddish fuscous; in the middle field is a reddish discal spot, annulate with ground color; two small light costal dots also on middle space; hind wings light fuscous, marginal line darker; beneath fore wings coppery ochreous, black along costa; fuscous in outer middle space; hind wings light ochreous fuscous, with faint outer band; all margins fuscous.

One ♀, Kentucky.

Tetralopha olivalis *sp. nov.*—Expands 23 mm. Palpi, head, thorax and wings to outer line olive fuscous; first line hardly evident, shown most clearly by black costal spot; a black discal spot; outer line black, heaviest towards costa, with a large outer sinus anteriorly, dentate thence to inner margin; outer space fuscous with reddish tinge, some olivaceous and lighter at middle; marginal line black, fringe interlined, black and olive fuscous; hind wings fuscous, with black discal dot and marginal line; beneath, fuscous ochreous, darkest outwardly; dots and outer lines quite distinct.

One ♂, Colorado.

Tetralopha atrifascialis *sp. nov.*—Expands 20 mm. Palpi white, black at ends; head, thorax and antennæ pure white, with some black scales intermixed; thorax with three black spots posteriorly; fore wings pure white, more or less heavily mixed with black scales, giving a snowy cinereous aspect; a black costal spot at base; the first line black, broad at costa, then constricted nearly or quite separated at middle, then broadening to costa, following inner margin to base in a fuscous shade; outer line white, sinuous, lined within with fuscous; a large, black, costal, apical triangle; black points on either side of outer line at inner margin; a marginal line of black dashes; fringe white, interlined brokenly with black; hind wings light fuscous, black marginal line; fringe as fore wings; beneath, fuscous on fore wings and anterior margin of hind wings; fringe as above. Abdomen cinereous, annulate with fuscous.

Three males and one female, Texas.

PHYCIDÆ.

NEPHOPTERYX Hübn.

Nephopteryx actualis *sp. nov.*—Expands 26 mm. Palpi, head and thorax black, with intermingled white scales giving a dark gray aspect. Abdomen grayish fuscous; fore wings cinereous fuscous, basal space in middle reddish; first line white, edged outwardly with black which is pronounced at costa; this line is angulated twice and begins on costa as far from base as on inner margin; middle space cinereous fuscous outwardly; outer line white, angulated; outer space with reddish, except at costa and posteriorly; a marginal line of well-marked black dots and a black discal spot on middle field; hind wings dark fuscous; margin black; all fringes light fuscous, black at base; beneath, quite even fuscous, a faint outer lighter line on fore wings.

One ♂, Colorado. Near *N. fenestrella* Pack.

Nephopteryx delassalis *sp. nov.*—Expands 24 mm. Palpi fuscous, reddish in front. Thorax reddish ochreous. Abdomen fuscous; fore wings reddish ochreous, quite even; costa on outer half narrowly white; first line scarcely perceptible anteriorly, whitish ochreous posteriorly with rather heavy black shadings; within and beyond these shadings indistinct whitish ochreous spots; outer line near margin evenly and strongly curved outward; hind wings fuscous outwardly, shading to light translucent fuscous towards base; a dark marginal line present; beneath, fore wings fuscous, with a faint reddish tinge; outer space a shade the lighter; hind wings as above; fringes above light fuscous, darker at base; light fuscous below.

One ♀, Nevada.

Nephopteryx perfuscalis *sp. nov.*—Expands 26 mm. Palpi and head dark fuscous; thorax above nearly black. Abdomen fuscous, with first segment black and second black above; fore wings blackish fuscous, with an ochreous shade medially on costa; two white cross lines rather broad, the first beginning below subcostal space going obliquely to inner margin, the outer near margin and parallel with it; discal space incompletely annulated with white; hind wings dark fuscous; all fringes white, fuscous at base; beneath even, light fuscous, a little lighter on outer field.

One ♀, California.

Nephopteryx lallatalis *sp. nov.*—Expands 30 mm. Palpi cinereous, black at base of second labial segment and at tip. Head and thorax cinereous. Abdomen nearly white, a little fuscous anteriorly on each segment; the whole of these peppered with black scales; fore wings cinereous, being white with a liberal peppering of black scales, most decided centrally and posteriorly; lines hardly to be traced; the first one showing in a white crescent, concave outwardly along inner margin and located on costa by black point outwardly; discal spot black, minute; outer line evident in an apical white crescent, concave outwardly, inclosing fuscous space; apex white; marginal line black; fringe gray; hind wings translucent light fuscous; fringe a shade lighter; beneath, fuscous; the hind wings lighter; a black diffuse spot at apex of fore wings indicating the outer cross line.

One ♂ one ♀, Nevada.

Nephopteryx pergratialis *sp. nov.*—Expands 28 mm. Palpi, head and antennæ dark brown; thorax brown, with a maroon shading. Abdomen fuscous; fore wings cinereous over anterior portion, becoming reddish fuscous on posterior portion; the inner line indistinct, but its outer shading of black prominent; outer line near margin, finely dentate, edged on both sides with black, especially to be noticed near apex; a subterminal cinereous dentate line and a marginal row of black spots; fringe fuscous, scales white at ends; hind wings dark fuscous; beneath, fore wings dark fuscous, hind wings fuscous.

One ♂, Florida. Near to the preceding species.

Nephopteryx uncanalis *sp. nov.*—Expands 25 mm. Palpi, head and thorax cinereous; the collar white, and thorax white laterally. Abdomen cinereous; anteriorly, annulated on the white; dark fuscous posteriorly, annulated with light fuscous; fore wings cinereous, costa at base white, the first band broad, black, constricted at costa and inner margin; two black spots well out on the middle field, one behind the other, the posterior ante-median; outer line white, not reaching costa, nearly straight, with dark shadings; outer space gray; marginal line white; hind wings fuscous outwardly, becoming translucent white at base; fringe white, fuscous at base.

One ♀, Colorado.

PINIPESTIS Grote.

Pinipestis fasciolalis *sp. nov.*—Expands 29 mm. With very much the aspect of *N. lallatalis* above, but with lines rather broad and decided, and curvatures in opposite direction; both lines shaded on both sides with black; a blackish cloud in median space ending in black discal spot; hind wings fuscous; beneath, fuscous; the fore wings darker with white spot near apex, showing beginning of outer line.

One ♂ one ♀, Nevada.

PEMPELIA Hübn.

Pempelia tarmitalis *sp. nov.*—Expands 25 mm. Palpi and head black; collar white; thorax black above, light fuscous laterally; all the black portions slightly peppered with light fuscous scales. Abdomen, first segment black above, light fuscous on sides, next segment black, the rest dark fuscous with a reddish shade; fore wings reddish brown at base, reaching one-fourth the length of wing, edged outwardly from costa to inner margin by a faint white line; a median dash of white on outer portion of base, very faint; rest of wing dark fuscous, slightly ochreous towards outer angle; merging with the white line limiting the basal color outwardly in a more prominent cinereous line, sinuous, running obliquely outward, inclosing between it and first line a patch of deep fuscous; two black spots on discal space, one anterior to the other; outer line cinereous, sinuous, dentate, faint anteriorly, obsolete posteriorly; fringe fuscous, end of scales white; hind wings pellucid fuscous; marginal line black; beneath, even fuscous, hind wings lighter, fore wings with outer line reflected.

One ♀, Colorado.

HOMEOSOMA Curt.

Homeosoma impressalis *sp. nov.*—Expands 30 mm. Palpi fuscous; head and thorax dirty white; abdomen light fuscous, white at tip. Fore wings white, a little peppered with black scales on anterior portion of basal and middle fields, washed slightly with fuscous posteriorly, and on outer space; a broad black band dividing the basal and middle fields, not reaching costa, and broken post medially, thus forming two subquadrate black spots; two black dots on outer median field, one anterior to the outer; a straight clouded outer band pretty close to outer margin; hind wings light pellucid fuscous, nearly white on anal half; beneath, pale fuscous, hind wings as above.

One ♂, Nevada.

MEGAPHYCIS Grote.

Megaphycis fernaldialis *sp. nov.*—Expands 50 mm. Palpi, head, thorax and fore wings cinereous; the thorax and wings a little the darker, the palpi being almost white at end. Fore wings with a fine black basal line on post-discal vein, running half way out the wing; beyond disc, veins 4 and 5 finely lined with black to margin; a marginal line of black spots; hind wings pellucid fuscous, iridescent, nearly transparent, white basally; marginal line dark fuscous, hairs along anal margin forming a fuscous band; fringe of fore wings cinereous, of hind wings white, fuscous at base; beneath, even glistening fuscous on fore wings; hind wings as above. Body and legs cinereous, the latter stout and long.

One ♀, Arizona. So far as I know the largest of our Pyralids, exceeding the giant *M. dentata* Grote in size. It is with great pleasure and respect, and with a vivid sense of very many favors done me, that I name it after the one who is greatest in general knowledge of the Microlepidoptera of America, and who has, if any, only one or two rivals in any special part of that great field of nature.

Megaphycis edwardsialis *sp. nov.*—Expands from 35 to 45 mm. Head, thorax, abdomen and fore wings fuscous to blackish fuscous; post-discal and submedian veins lined with black; an outer light fuscous cross line, before which all veins have a short black dash continued beyond on outer space; hind wings lighter dull fuscous; beneath, even fuscous.

Two ♂ ♂ one ♀, Nevada. Named in honor of Hy. Edwards, who has added very much to our knowledge of the insects of all orders of the Pacific coast, and who for his constant acts of generosity has my gratitude.

ANERASTIA Hübn.

Anerastia exeautalis *sp. nov.*—Expands 22 mm. Palpi light fuscous; the rest of the insect, except abdomen and hind wings, soft fuscous brown, the middle field of fore wings perceptably darker. Abdomen soft blackish fuscous; hind wings fuscous, with a faint darker marginal line; beneath, concolorous, with hind wings above.

One ♀, California.

Anerastia cestalis *sp. nov.*--Expands 25 mm. Palpi, head and thorax gray; shoulders nearly white. Abdomen fuscous; fore wings fuscous, mixed with cinereous, not evenly, but running in indistinct longitudinal dashes; a black point on costa marking the probable position of the obsolete first cross line; outer line black, not very distinct, oblique, strongly dentate costally; a large lighter patch, in which the fuscous does not so much prevail; costally next the outer line on the middle field; margin cinereous, inclosing row of black points; fringe cinereous, interlined with black; hind wings fuscous; fringe whitish, fuscous at base; beneath, light fuscous; fore wings cinereous along costa, with two apical black points; wing nearly white along inner margin; fringe as above; hind wings cinereous in front, fringe as above.

One ♀, Colorado.

Anerastia dotalis *sp. nov.*—Expands 26 mm. Palpi, head, thorax fuscous white, with a few scattered black scales. Abdomen fuscous white, with a faint ochreous cast on the posterior part of each segment; fore wings and base ochreous, followed by light cinereous; first cross line blackish, running obliquely outward, strongly angulated at ante-median space, edged with whitish on basal side, and that edged with a broad even ochreous fuscous band; middle field white, much peppered with black on anterior half, the same with an ochreous shading on posterior half; discal spot ochreous, annulated with black; outer line oblique, somewhat angulated just before middle, edged outwardly with whitish, and that with a band of same width and color as the one within basal line; outer space cinereous, inclosing a subterminal black line; fringe cinereous; hind wings pellucid white, slightly fuscous on anterior angle; fringe white; beneath, fore wings dirty white, with a faint ochreous shade along costa, on outer field, and broadly along inner margin; centrally fuscous; hind wings white, a little fuscous on anterior margin.

One ♀, Arizona. This insect differs from any other I know in its full rounded bulging clypeus, and is not properly congeneric.

EPHESTIA Güen.

Ephestia albocostalialis *sp. nov.*—Expands 28 mm. Palpi cinereous, indistinctly annulated with whitish; head and collar snowy cinereous; thorax and abdomen dark fuscous cinereous; fore wings with a snow white costal band, occupying the space to the subcostal vein, and reaching outwardly to a point nearly at apex, fading on the outer half along costa into mouse color; the rest of the wing dark fuscous, basally and medially, fading behind and outwardly into fuscous mouse color, a very fine submedian white dash present on middle portion; fringe blue-gray, finely interlined with white; hind wings fuscous outwardly, fading to light fuscous basally; fringe light fuscous; beneath, dark fuscous, with a lengthened ante-median white spot, crowned with ochreous subcostally; hind wings as above.

One ♂, California.

As has been seen, I have described many of the above from females only. The generic determination, as genera at present stand, is loosely hypothetical. I have named them simply that they may be handled in the science.

CRAMBIDÆ.

CRAMBUS Fabr.

Crambus extorralis *sp. nov.*—Expands 16 mm. Head, palpi and thorax above fuscous; shoulders and abdomen white, with fuscous annulations on latter; fore wings with costa dark fuscous to subterminal cross line, this followed by a broad pure silver white longitudinal band from base to cross line; this edged with dark fuscous; behind fuscous along inner margin, ochreous between, fading into fuscous outwardly; cross line white, bifid anteriorly, running with one arm to costa, the other which is the continuance of the broken central band to apex, edged inwardly with dark fuscous; apical triangle dark fuscous, light centrally along costa; subterminal space fawn, marginal line black, fringe white at base, fuscous outwardly; hind wings nearly pure white; beneath, fore wings fuscous, hind wings white.

Two ♂ ♂, Florida, Louisiana. Of the *leachellus* group.

Crambus trichusalis *sp. nov.*—Expands 30 mm. Palpi dark fuscous, white above. Head fuscous, mixed with white; antennæ fuscous; thorax white anteriorly, fuscous behind. Abdomen fuscous; fore wings generally dark fuscous; costa cinereous, except at base and near apex; subcostal space cinereous; median space white, not quite reaching base or outer cross line; long, pointed at each end; submedian space light fuscous, inner margin outwardly whitish, the cross line white, curved, lined inwardly with dark fuscous; apical fuscous space inclosing white triangle; subterminal space white, toothed and broken with fuscous; marginal black line anteriorly, five black dots posteriorly; hind wings white, with a fuscous shade; beneath fuscous, with markings reflected, strongly whitish subterminally; marginal spots distinct; hind wings white.

One ♂, Colorado. Near *C. hastiferellus* Walk.

Crambus cypridalis *sp. nov.*—Expands 30 mm. Palpi cinereous fuscous; thorax and abdomen ochraceous fuscous; fore wings ochraceous, somewhat cinereous along inner margin; a broad, white, median band reaching to, but not passing, cross line; broad at base, pointed outwardly; above its point a narrow white space and another within line at costa; costal, apical and outer apical white triangles divided by a fuscous apical line; posterior subterminal space cinereous fuscous, inclosing five black dashes on veins; marginal line fine, fuscous; fringe white, fuscous at base posteriorly; hind wings white, slightly fuscous at apex; beneath, fore wings light fuscous; white outwardly, along inner margin and medially; hind wings white.

One ♂, Utah. Allied to *C. hastiferellus* Walk.

Crambus delectalis *sp. nov.*—Expands 30 mm. General color a dirty ochreous with lighter shadings; fore wings crossed at middle by a lighter ochreous line, angulated strongly twice outwardly; outer line curved, wavy, light dirty ochreous, edged inwardly with fuscous; beyond, costa to apex white; an irregular white spot at middle in subterminal space with a black dash anteriorly and posteriorly; apex and subapical space outreaching by a squarely cut off space on outer margin; apex with a white line; fringe at apex white, then fuscous,

white at break, fuscous at angle within, light fuscous below; hind wings translucent fuscous; beneath, light fuscous, marked with white and dark interlines at apex of fore wings.

One ♀, Arizona. Perhaps not congeneric with *Crambus*.

Crambus offectalis *sp. nov.* Head, palpi, thorax and abdomen fuscous gray, nearly mouse color; fore wings, costa irregularly broken black and white; apex above with a small quadrate white spot; wing ochreous on ante-median portion, some edged along veins with fuscous, running by striations into a band of smoky blackish along inner margin; two brown dashes near middle of wing; outer cross line only indicated; subterminal space cinereous at middle, with veins marked with black; fringe mixed black and white; hind wings dark fuscous, marginal line black; beneath fuscous, with light ochre medially and along costa of fore wings; hind wings lighter than above. Expands 28 mm.

One ♀, Colorado. Takes a place best in the *exsiccatus* group.

Crambus cuneolalis *sp. nov.*—Expands 19 mm. Maxillary palpi fuscous cinereous, labial palpi nearly white; thorax fuscous anteriorly; posteriorly and abdomen light cinereous; wings cinereous, overlaid more or less with fuscous shadings, these giving a basal and median cross band; an extra median twice strongly angulated line, black at middle, edged with unbroken cinereous within; another dark line within and edging outer white line, which is angulated ante-medially; in subterminal space a white spot at apex and post-medially, the latter crossed by four black vein dashes; marginal line fuscous, outer edge broken at apex, but not so squarely as in preceding species; fringe interlined black and white at apex, fuscous behind; hind wings light fuscous; beneath fuscous, ochreous along costa, cinereous along outer margin, white at apex; hind wings fuscous white.

Two ♂ ♂, Texas. The above has considerably the appearance of *C. hulstellus* Fern.

Crambus refotalis *sp. nov.*—Expands 20 mm. Palpi speckled fuscous and light ochre. Head, thorax and abdomen light ochre; fore wings light ochre at base, becoming ochreous outwardly, overlaid with squammose fuscous; a median indistinct black line running from middle of inner margin obliquely outwards to costa; a smoky, cinereous, indistinct, broken outer band, with a fuscous cinereous patch medially just before it; margin with a row of black dots; fringe cinereous at base, fuscous outwardly; hind wings fuscous; fringe lighter; beneath, light fuscous; base of fringe white.

Two ♂ ♂, Colorado. Near to *C. oregonicus* Grote.

Crambus biothanatalis *sp. nov.* Size and ground color very much as the preceding; ochreous white in median space from base and along inner margin reaching nearly to cross line; cross line broken white and light ochre, rectangular, edged inwardly by dark shading; marginal space ochreous, with a black point at end of each vein; fringe metallic fuscous, giving a golden reflection; hind wings fuscous; fringe light fuscous; beneath, uniform light fuscous.

One ♂, California. Near to *C. attenuatus* Grote.

Crambus bonusculalis *sp. nov.*—Size of preceding. Palpi, head, collar and shoulders white; thorax and abdomen light ochre; fore wings light ochre, with veins fuscous shaded; two golden ochreous cross lines, the first at outer edge of cell, sinuous, the other subterminal, edged outwardly with fuscous; marginal band of golden yellow; a marginal row of black points; fringe metallic, black at base, iridescent outwardly, silvery near outer angle; hind wings white, washed with gold outwardly; beneath fuscous, yellowish outwardly on fore wings; fringe dark fuscous, metallic along inner margin; hind wings white; marginal line of hind wings yellowish.

Two ♀ ♀, Massachusetts. Close to *C. ruricollellus* Zell., and perhaps a variation of that species.

Crambus gausapalis *sp. nov.*—Expands 24 mm. Palpi ochreous, mouse color at end. Head and thorax ochreous fuscous. Abdomen nearly mouse color; fore wings light ochreous, cell marked with brown; beyond all veins edged with brown; two brown lines, the first forming the outer edge of cell, strongly angulated at end of cell, the second subterminal with a right angle at middle, edged inwardly with yellow and outwardly with dull white; outer space brown, whitish ochreous along margin; an ante-median marginal line with post-median black spots; outer edge falcate; apex pointed; fringe interlined, metallic on posterior half of wing; hind wings white, anterior margin yellow; marginal fuscous line at apex; beneath, fuscous, outer line faintly evident in row of dark points; outer space whitish; marginal line black; hind wings as above.

Two ♂ ♂ one ♀, Sierra Nevada Mountains, California. Also near to *C. ruricollellus* Zell.

Crambus comptulatalis *sp. nov.*—Expands 25 mm. Palpi dark fuscous, lighter at base; thorax brown. Abdomen dark mouse color, annulated with lighter shade; fore wings very even ochreous brown, somewhat fuscous on outer space, some intra-median black scales followed by a faint white dash; orbicular a black dot preceded by a faint white dash, and succeeded by a small white spot; hind wings dark fuscous, with three or four indistinct median whitish spots, indicating an outer line; beneath, uniform fuscous brown, with fore wings fuscous in median space.

One ♀, Vancouvers Island. It is with much doubt I place this insect in this genus.

SCHOENOBIUS Dup.

Schoenobius opalescalis *sp. nov.*—Expands 29 mm. Palpi dark fuscous, cinereous above; head cinereous; thorax dark fuscous. Abdomen fuscous, annulated with cinereous; fore wings light gray, formed of several longitudinal narrow bands of white and light fuscous, the scales of the two colors being much mixed; costa and a post-median line more decidedly fuscous; apex much rounded; fringe concolorous with wings; hind wings light fuscous, somewhat opalescent; marginal line white; beneath, fuscous on fore wings, whitish apically; hind wings as above.

One ♂, Arizona. The wings outwardly are very different from the other species of this genus, as they are very much rounded at apex.

Since the preceding pages were in press the following species has been detected:

Hydrocampa australis *sp. nov.*—Expands 16 mm. Palpi ochreous blackish at tip; front ochreous, vertex and base of antennæ black; thorax and abdomen light ochreous; fore wings generally light ochreous, basally to reniform variegated with fuscous ochreous, beyond more generally fuscous ochreous; there is a rounded line close to base; a second just beyond, straight; a third running from reniform to inner margin straight; the reniform is long, reaching to costa, constricted so as to be nearly divided near costa, annulate with fuscous; an outer line running from costa sinuous to outer angle just before reaching which, it runs a short distance parallel with the margin around angle; within this line are two light ochreous spots, one costal the other post-median; marginal line fuscous, fringe interlined fuscous and light ochreous; hind wings with second and third lines of fore wings continued, generally light ochreous; within middle fuscous, outwardly in each case broken with the other color; marginal line fuscous; fringe interlined fuscous and light ochreous; beneath fuscous, and fuscous ochreous mixed lines faintly marked; all colors much indeterminate, hind wings lighter, marginal lines fuscous; fringes mixed fuscous and light fuscous.

One ♂, Florida.

The following errors have accidentally escaped correction:

Page 147, for **ennieulalis** read **annieulalis.**
" 154, " **thrallophilalis** read **thallophilalis.**

A generic Synopsis of the hymenopterous Family PROCTOTRUPIDÆ.

BY L. O. HOWARD.

This large family has been but little studied in this country, although considerable material for study is to be found in the various collections. I have been able to pay but little attention to the group, and this synopsis is nearly a literal translation of that which appears in Part II of Dr. Foerster's "Hymenopterologische Studien," Aachen, 1856. I have inserted, however, several of his more recently erected genera taken from his "Kleine Monographien," and also one or two others which have been described since. The division into subfamilies which immediately follows is faulty in the absence of the subfamily BETHYLINÆ, a generic synopsis of which is included later. My excuse for this omission is ignorance of the general characters of this subfamily, which, together with the Embolemінæ, is omitted by Foerster from his subfamily synopsis. I have been unable to find a copy of Haliday's "Hymenopterorum Synopsis" in America in which the characters of this subfamily are presumably given, and while this synopsis is being printed Prof. Riley is kindly searching for this paper in English libraries. I am advised, however, not to defer publication on this account. I have prefixed an asterisk to those genera, species of which have been published as found in America north of Mexico, and a dagger to those which I have myself recognized in collections (mainly in Prof. C. V. Riley's, now the property of the National Museum by donation), but which have not yet been published as American. Of the one hundred and thirteen genera mentioned in the synopsis, but twenty-nine have thus far been found in this country.

Family PROCTOTRUPIDÆ.

Hind wings with a distinct lobe near base, or, where the wings of the ♀ are wanting, the fore feet are fitted for grasping.

Antennæ with same number of joints ♂ and ♀.....Subfamily Dryinidæ.

♂ antennæ 10- ♀ 13-jointed.....Subfamily Embolemінæ.

Hind wings not lobed.
The front tibiæ with two spurs.....Subfamily **Ceraphroninæ.**
Front tibiæ with one spur.
Mandibles not toothed.....Subfamily **Proctotrupinæ.**
Mandibles toothed.
Abdomen acutely margined on the sides; antennæ arise near the border of the mouth.
Wings with a marginal vein and occasionally also with a stigmal; the unwinged genera without ocelli.....Subfamily **Scelioninæ.**
Wings without marginal and stigmal veins; all genera with ocelli.
Subfamily **Platygasterinæ.**
Abdomen not acutely margined; antennæ arise far above the border of the mouth.
Hind wings without a trace of a median vein.
Hind wings very small, almost linear.....Subfamily **Mymarinæ.**
Hind wings broader, not linear.....Subfamily **Diapriinæ.**
Hind wings with a median vein.
Fore wings with or without a regular basal vein (*grundader*); flagellum without a ring-joint.....Subfamily **Belytinæ.**
Fore wings with an abruptly broken basal vein, from one end of which arises a cubital vein distinguished by its irregular course; both together these form an irregular discoidal cell; flagellum with one ring-joint.....Subfamily **Helorinæ.**

Subfamily Dryininæ.

Vertex deeply impressed.
With wings.....* Genus **Dryinus** Latreille.
Without wings.....* Genus **Gonatopus** Ljungh.
Vertex convex, not impressed.
Occiput deeply concave; vertex and neck separated by a sharp angle.
Genus **Labeo** Haliday.
Occiput delicately concave; vertex and neck not so markedly separated.
Fore tarsi with scissor-like or pincer-like claws, ♀; pronotum visible above, but not longer than mesonotum, ♂.
Fourth tarsal joint of the fore tarsi much longer than third, ♀; pronotum as long as, or nearly as long as mesonotum, ♂ ♀.
† Genus **Chelogynus** Haliday.
Fourth tarsal joint as long as, or scarcely longer than third, ♀; pronotum much shorter than mesonotum, ♂ ♀.....Genus **Anteon** Jurine.
Fore tarsi not scissor- or pincer-like, ♀; pronotum above not visible, or longer than mesonotum, ♂.
Pronotum much longer than mesonotum; mesonotum without a trace of a furrow; wings short, spoon-shaped.
Genus **Mystrophorus** Foerster.
Pronotum above not, or very slightly visible; mesonotum very strongly developed; mesoscutum with distinct furrows; wings fully developed, ♂ ♀.....Genus **Aphelopus** Dalman.

Subfamily EMBOLEMINÆ.

Eyes arched, ocelli large; scape shorter than first funicle joint.
Genus **Embolemus** Westwood.
Eyes flat, ocelli very small; scape much longer than first funicle joint; wings rudimentary..... .....Genus **Pedinomma** Foerster.

Subfamily BETHYLINÆ.

Head without ocelli.....Genus **Sclerochroa** Foerster.
Head with ocelli.
Fore wings with a complete radial cell.....Genus **Sierola** Cameron.
Fore wings with a nearly complete radial cell.
Basal vein with a backwards directed branch.
Antennæ 12-jointed, ♂ ♀ .....Genus **Perisemus** Foerster.
Antennæ 13-jointed .....* Genus **Goniozus** Foerster.
Basal vein without a branch.
Parapsidal furrows plain; abdominal segments of almost equal length.
* Genus **Epyris** Westwood.
Parapsidal furrows wanting; abdominal segments of unequal length.
Genus **Isobrachium** Foerster.
Fore wings without a radial cell.
Fore wings with a marginal and a stigmal vein.
* Genus **Bethylus** Latreille.
Fore wings without marginal and stigmal veins.
Antennæ 13-jointed .....Genus **Ateleopterus** Foerster.
Antennæ 12-jointed.....Genus **Holopedina** Foerster.

Subfamily CERAPHRONINÆ.

Head flat, perfectly horizontal; vertex with a median furrow.
Genus **Synarsis** Foerster.
Head more rounded, not perfectly horizontal; vertex without a median furrow.
No ocelli.....Genus **Lagynodes** Foerster ♀.
With evident ocelli.
Wings without a plain radial cell, or narrow with a linear radial cell.
Head with a sharp tooth between the bases of the antennæ.
Genus **Lagynodes** Foerster ♂.
Head without such a tooth.....* Genus **Ceraphron** Jurine.
Wings with a broad radial cell.
Wings perfectly hairless.....Genus **Trichosteresis** Foerster.
Wings hairy.
Antennæ toothed or branched, ♂; eyes smooth, not hairy, ♀.
Mesonotum with furrows.....† Genus **Lygocerus** Foerster.
Mesonotum without furrows.....Genus **Atritomus** Foerster.
Antennæ filiform, ♂; eyes hairy, ♀.
† Genus **Megaspilus** Westwood.

Subfamily PROCTOTRUPINÆ.

This subfamily consists of the single genus *Proctotrupes*, which is sufficiently distinguished by its untoothed mandibles from all other Proctotrupid genera. A number of species of this genus are figured by Snellen Van Vollenhoven in his Pinacographia with more than his usual care. Several North American species have been described by Say, Provancher and Patton.

Subfamily SCELIONINÆ.

Antennal club not jointed.
  Winged.....Genus **Thoron** Haliday. ♀.
  Unwinged or with short wing-pads.
    Without mesoscutellum.....† Genus **Baeus** Haliday.
    With an evident scutellum.....Genus **Aeolus** Foerster.
Antennal club jointed.
  Submarginal vein shortened, not reaching costa..† Genus **Baeoneura** Foerster.
  Submarginal vein not shortened, reaching costa.
    Marginal vein very long, at least four or five times as long as stigmal.
      Mesoscutum with two sharp, distinct, complete furrows; antennæ of ♂ long, with whorled hairs (♀ club-shaped).
        Genus **Xenomerus** Walker.
      Mesoscutum not furrowed; ♂ antennæ not with whorled hairs.
        Hind tarsi thickened; middle tibiæ with weak spurs.
          † Genus **Teleas** Latreille.
        Hind tarsi not thickened; middle tibiæ without spurs.
          † Genus **Prosacantha** Nees.
    Marginal vein short, usually shorter than stigmal.
      First segment small, the abdomen not broadening from it.
        Second segment largest.....* Genus **Teleonomus** Haliday.
        Third segment largest.
          Stigmal vein thickened at base.....Genus **Anteris** Foerster.
          Stigmal vein not thickened at base.....Genus **Baryconus** Foerster.
      First segment broad; abdomen broadening from it.
        Face with a sharp spur.....† Genus **Sparasion** Latreille.
        Face without a spur.
          Postmarginal vein strongly lengthened, longer than stigmal.
            Metascutellum with a spur.....Genus **Trimorus** Foerster.
            Without spur.
              Antennæ filiform, ♀.....Genus **Apegus** Foerster.
              Antennæ club-shaped ♀, or filiform ♂.
                Marginal vein punctiform; last joint of antennal club twice as long as the preceding joint.....Genus **Gryon** Haliday.
                Marginal vein half as long as the shaft of the stigmal; last joint of antennal club scarcely longer than preceding.
                  * Genus **Hadronotus** Foerster.
          Postmarginal vein is wanting, or is shorter than stigmal.
            Postmarginal wanting.....* Genus **Scelio** Latreille.
            Postmarginal present, but much shorter than stigmal.
              Genus **Idris** Foerster.

Subfamily PLATYGASTERINÆ.

Submarginal vein with a knob at tip.
  Tarsi 4-jointed..... .....Genus **Iphetrachelus** Haliday.
  Tarsi 5-jointed.
    Antennæ 9-jointed, dentate with ♂ .....Genus **Allotropa** Foerster.
    Antennæ 10-jointed, not dentate with ♂.
      Wings with a basal and a median vein.
        The three last funicle joints much larger than the rest, forming a club.
                                Genus **Metaclisis** Foerster.
        The last joint alone longer than the preceding.
                                Genus **Monocrita** Foerster.
      Wings without basal and median veins.
        The basal ocelli nearer the apical than to the inner border of the eye.
                                Genus **Isostasius** Foerster.
        The basal ocelli nearer the inner border of the eye than to the apical ocellus.
          The ♀ with a horn on first abdominal segment.
                                * Genus **Inostemma** Haliday.
          The ♀ without such a horn... .....Genus **Acerota** Foerster.
Submarginal vein without a knob at tip.
  Scutellum more or less lengthened, never semi-circular, or when shortened it is compressed at the sides and furnished with an awl-shaped or warty tip.
    Thorax strongly compressed from sides..... .... Genus **Catillus** Foerster.
    Thorax not compressed.
      Scutellum lengthened, without thorn-, awl-, or wart-shaped tip.
        Parapsidal furrows deep, parallel behind.
                                Genus **Xestonotus** Foerster.
        Parapsidal furrows very faint or absent.
                                Genus **Amblyaspis** Foerster.
      Scutellum lengthened, with a thorn-, awl-, or wart-shaped tip.
        Scutellum extended in a more or less strong thorn.
          Basal ocelli nearer the eyes than to the apical ocellus; club of ♀ 4-jointed.....† Genus **Leptacis** Foerster.
          Basal ocelli not nearer the eyes; club of ♀ 3-jointed.
                                Genus **Isorhombus** Foerster.
        Scutellum extended in an awl- or wart-shaped tip, is somewhat shortened and compressed laterally.
          Abdomen very much lengthened.....Genus **Ectadius** Foerster.
          Abdomen not especially lengthened.
            Second ventral abdominal segment strongly compressed with ♀.
                                Genus **Sactogaster** Foerster.
            Second ventral abdominal segment not compressed.
                                Genus **Synopeas** Foerster.
    Scutellum not lengthened, semi-circular; either flat or convex.
      Scutellum quite flat.....Genus **Anopedias** Foerster.
      Scutellum not flat.
        Head cubical.....Genus **Isocybus** Foerster.
        Head not cubical.

Scutellum with a tuft of hair at tip.....Genus **Trichacis** Foerster.
Scutellum without a tuft of hair at tip.
Border of abdomen very broadly turned over.
Genus **Hypocampsis** Foerster.
Border of abdomen not very broadly turned over.
Scutellum pillow-shaped, separated from scutum by a deep furrow; scapulæ very broad.....Genus **Polygnotus** Foerster.
Scutellum not separated from scutum by a deep furrow; scapulæ not very broad.....* Genus **Platygaster** Latreille.

Subfamily MYMARINÆ.

Tarsi 5-jointed.
Abdomen plainly petiolate.
Antennæ 10-jointed with ♂, 9-jointed with ♀.
Genus **Camptotera** Foerster.
Antennæ 13-jointed with ♂, 11-jointed with ♀.
Genus **Doctonus** Haliday.
Abdomen sessile or nearly so.
Male.
Marginal vein reaches to middle of costa.
† Genus **Limacis** Foerster. ♂
Marginal vein does not reach to middle of costa.
Antennæ 13-jointed.....Genus **Gonatocerus** Nees, ♂
Antennæ 10-jointed.....Genus **Alaptus** Walker, ♂.
Female.
Antennæ 11-jointed.....Genus **Gonatocerus** Nees, ♀.
Antennæ with less than 11-joints.
Antennæ 9-jointed.....Genus **Litus** Haliday.
Antennæ 8-jointed.
Marginal vein reaches to middle of costa.
† Genus **Limacis** Foerster, ♀.
Marginal vein not reaching to middle of costa.
Genus **Alaptus** Walker, ♀.
Tarsi 4-jointed.
Antennal club with two rings.
Marginal vein very long; the four hind tarsi shorter than their tibiæ.
Genus **Eustochus** Haliday.
Marginal vein very short; the four hind tarsi longer than their tibiæ.
Genus **Doriclytus** Foerster.
Antennal club not ringed.
Abdomen plainly petiolate.
Fore wings widened only at tip.....Genus **Mymar** Haliday.
Fore wings not widened solely at tip.
Marginal vein punctiform.....* Genus **Cosmocoma** Foerster.
Marginal vein lengthened.
Metathorax with two carinæ; ♀ antennæ 9-jointed (♂ unknown).
Genus **Caraphractus** Walker.
Metathorax not carinate; ♂ antennæ 10-jointed, ♀ 9-jointed.
Genus **Stictothrix** Foerster.
Abdomen sessile, or nearly so.

Antennæ with the ♂ 12-jointed (with the female 9-jointed); marginal vein lengthened and somewhat thickened towards the tip.
* Genus **Anaphes** Haliday.

Antennæ with the ♂ 13-jointed (with the ♀ 9-jointed); marginal vein linear, not thickened towards tip.....Genus **Anagrus** Haliday.

Subfamily DIAPRINÆ.

Wings with a heart-shaped piece cut out from tip.
Genus **Entomacis** Foerster.

Wings entire.
Scape greatly developed (mesonotum without furrows).
Genus **Platymischus** Westwood.

Scape not especially developed.
Scape with a knot at middle; face greatly lengthened.
* Genus **Galesus** Curtis.

Scape without a median knot; face not greatly lengthened.
Submarginal vein not reaching costa.
Submarginal with a stigmal at tip.
* Genus **Aneurhynchus** Westwood.

Submarginal simple, without stigmal, ♀....Genus **Labolips** Haliday.

Submarginal reaching costa.
Male.
Antennæ 12-jointed.....Genus **Cephalonomia** Westwood, ♂.
Antennæ 13- or 14-jointed.
Antennæ 13-jointed.
First funicle joint hardly half as long as second.
Genus **Paramesius** Westwood, ♂.

First funicle joint as long as, or longer than second.
Second abdominal segment with one or more pits at base.
Marginal vein present.....Genus **Idiotypa** Foerster, ♂.
Marginal vein absent.....Genus **Hemilexis** Foerster, ♂.

Second segment without pits at base.
* Genus **Spilomicrus** Westwood, ♂.

Antennæ 14-jointed.
Wings without basal vein.....† Genus **Diapria** Latreille, ♂.
Wings with a basal vein.
First funicle joint shorter than second.
* Genus **Basalys** Westwood, ♂.

First funicle joint not shorter than second.
Genus **Loxotropa** Foerster, ♂.

Female.
Antennæ 12-jointed.
Head large and flat.....Genus **Cephalonomia** Westwood, ♀.
Head not large and flat.
Wings without basal vein.
Mesonotum with plain furrows.
Genus **Glyptonota** Foerster.

Mesonotum without furrows...† Genus **Diapria** Latreille, ♀.
Wings with a basal vein.
Mesonotum with furrows; club 5-jointed.
Genus **Idiotypa** Foerster, ♀.
Mesonotum without furrows; club at most 4-jointed.
Genus **Loxotropa** Foerster, ♀.
Antennæ 13- or 14-jointed.
Antennæ 13-jointed.
Club with only one joint.....Genus **Monelata** Foerster, ♀.
Club with more than one joint.
Abdomen conically pointed.
Genus **Paramesius** Westwood, ♀.
Abdomen truncate at tip.
Marginal vein absent.....Genus **Hemilexis** Foerster, ♀.
Marginal vein present..Genus **Spilomicrus** Westwood, ♀.
Antennæ 14-jointed (mesonotum with furrows).
Genus **Polypeza** Foerster, ♀.

Subfamily Belytinæ.

Male.
Eyes naked.
Mesoscutum without furrows..... ...Genus **Ismarus** Haliday.
Mesoscutum with furrows.....Genus **Psilomma** Foerster.
Eyes hairy.
Postscutellum with a strong thorn.....Genus **Oxylabis** Foerster.
Postscutellum without a thorn.
Middle carina of metanotum divided before its end and enclosing a central space (radial cell open or closed).
† Genus **Belyta** Jurine.
Middle carina of metanotum not divided.
Radial cell wanting or open.
Stigmal and postmarginal so much shortened that the radial cell can scarcely be seen.
Basal vein not visible.....Genus **Synacra** Foerster.
Basal vein plainly present.....Genus **Pantolyta** Foerster.
Radial cell more or less plainly present.
Fore tibiæ strongly bent outwards, with a blunt or sharp tooth or a sharp thorn.....Genus **Zygota** Foerster.
Fore tibiæ not so bent.....Genus **Aclista** Foerster.
Radial cell closed.
Petiole of abdomen not longer, or scarcely longer than metanotum.
Border of scape at tip produced on one side into a tooth.
Genus **Acropiesta** Foerster.
Border of scape at tip not produced.
Last ventral segment very straight and punctured.
Genus **Anectata** Foerster.
Last ventral segment somewhat bent, not punctured.
Genus **Pantoclis** Foerster.
Petiole of abdomen almost twice as long as metanotum.

Marginal vein twice as long as radial cell.
Genus **Macrohyunis** Foerster.
Marginal vein not twice as long as radial cell.
Marginal vein as long as, or a little longer than stigmal, but much shorter than the radial cell.....Genus **Xenotoma** Foerster.
Marginal vein much longer than stigmal, about as long as radial cell.
Second abdominal segment laterally compressed, pear-shaped; petiole smooth above; scape as long as first funicle joint.
Genus **Leptorhaptus** Foerster.
Second abdominal segment not laterally compressed; abdomen becoming flatter behind this segment; petiole above more or less furrowed; scape longer than first funicle joint.
* Genus **Cinetus** Jurine.

Female.

Eyes naked.
Mesoscutum without furrows.....Genus **Ismarus** Haliday.
Mesoscutum with furrows.....Genus **Psilomma** Foerster.
Eyes hairy.
Antennæ 12-jointed.....Genus **Synaera** Foerster.
Antennæ more than 12-jointed.
Antennæ 14-jointed.
Ocelli wanting.....Genus **Anommatium** Foerster.
Ocelli present.
Radial cell scarcely visible.....Genus **Pantolyta** Foerster.
Radial cell plain.....Genus **Anectata** Foerster.
Antennæ 15-jointed.
Metascutellum with a strong thorn.....Genus **Oxylabis** Foerster.
Metascutellum without a thorn.
First funicle joint almost as long as all the rest together.
Genus **Diphora** Foerster.
First funicle joint much shorter than all the rest together.
Middle carina of metanotum divided; (radial cell open or closed).
† Genus **Belyta** Jurine.
Middle carina of metanotum not divided.
Third dorsal segment of abdomen much longer than fourth.
Marginal vein as long as radial cell; last funicle joint more than double as long as broad.
* Genus **Cinetus** Jurine.
Marginal vein much shorter than radial cell; last funicle joint not more than double as long as broad.
Genus **Xenotoma** Foerster.
Third dorsal segment not, or not much longer than fourth.
Abdomen with eight dorsal segments.
Radial cell closed.
Funicle joints only slightly shortened towards the end.
Genus **Zelotypa** Foerster.
Funicle joints strongly shortened towards the end.
Genus **Pantoclis** Foerster.
Radial cell open.

Stigmal and postmarginal veins much shortened; stigmal given off at almost a right angle.

Genus **Zygota** Foerster.

Stigmal and postmarginal not much shortened; stigmal given off at a very oblique angle.

Genus **Aelista** Foerster.

Abdomen with less than eight dorsal segments.

Abdomen with seven dorsal segments.

Genus **Acropiesta** Foerster.

Abdomen with less than seven dorsal segments.

Marginal vein more than twice as long as radial cell.

Genus **Macrorhyanis** Foerster.

Marginal vein shorter, as long as, or scarcely longer than radial cell.

Abdomen with three dorsal segments, the second very much lengthened, almost reaching the tip of the abdomen, the third issuing from the second like a short style; marginal vein plainly shorter than radial cell.

Genus **Miota** Foerster.

Abdomen with three, very seldom with four dorsal segments, the second not greatly lengthened, the third equally large and strongly compressed laterally; marginal vein not shorter than radial cell.

Genus **Leptorhaptus** Foerster.

Subfamily HELORINÆ.

This subfamily consists only of the genus *Helorus* Latreille, which is sufficiently characterized in the subfamily synopsis. One undescribed species of the genus has been collected in this country. A single specimen was sent me by Mr. Cresson labeled "Canada."

The genus *Copelus* Provancher (Petite Faune entomologique de Canada, II, 539, 1883), seems, from the figures and description which Mr. Provancher gives, to be identical with *Helorus*. The author places it with the Braconidæ, and says: "The singular arrangement of the wing-veins with these insects renders them at once remarkable. The form of the abdomen would seem at first to place them with the Proctotrupidæ, but the perfect venation of the wings excludes them from this family."

The proper position of this genus has been a matter of considerable dispute. The full venation of the wings and its evident high organization must place it at the head of the Proctotrupidæ. The species which I have seen bears a strong superficial resemblance to the Sphegid genus *Tiphia*. Its habits are those of a parasite, and *H. anomalipes* Panz., has been bred from the pupa of a *Hemerobius*.

Monograph of the MUTILLIDÆ of North America.

BY CHARLES A. BLAKE.

The accumulation of much new material, in this interesting family, from all parts of the country has suggested a revision of the "Synopsis" published in the "Transactions" in 1871, which, although tolerably complete at that time, the subsequent discovery of new species and also of a new genus, together with changes in nomenclature, have rendered a review of the work both necessary and desirable.

Full descriptions of all the species known to me are given, and of those that have not been identified descriptions are added, in most cases in the author's own words, thus assisting the student to identify his material without the necessity of consulting scientific works, which are often published in foreign languages, and generally difficult of access.

The Mutillidæ, unlike the Formicidæ, or social ants, are solitary in their habits, and usually found in hot sandy situations. The species of the genus *Mutilla* are now well known to be parasitic, especially on various species of *Bombus*, and it is presumable that those of the other genera of the family are likewise of the same habit.

The characters of *Sphærophthalma*, which was treated as a subgenus in the "Synopsis," appear to be sufficiently constant and distinct to warrant its elevation into a genus; the smooth, round eyes separating it at once from *Mutilla*, which have the body less coarsely sculptured and not so densely hirsute.

The selection of the name *Agama* used for a genus erected for the reception of those species characterized by the more or less shining unicolorous body, unusually large eyes and ocelli, and hyaline wings was unfortunate, as it was preoccupied in the Reptilia, a fact overlooked at the time. The name *Photopsis* is therefore substituted. Of this genus the males only are known, and it is possible that the females, which have thus far escaped the observations of collectors, are larviform and subterraneous in their habits.

Chyphotes is the name I propose for a new genus, characterized by the binodose thorax and petiolate abdomen, the first segment of which is very slender at base and suddenly dilated and nodose at apex; the eyes are smooth and round, as in *Sphærophthalma*, while the absence of ocelli separated it from *Myrmosa*.

The genus *Apterogyna*, which does not appear to have been found in North America, is remarkable for the two anterior segments of the abdomen being constricted and nodose, and for the great length of the antennæ in the male, being nearly as long as the body, and for the curious neuration of the wings.

The genus *Bradynobœnus*, also exotic, is characterized by the large quadrate head, having the anterior and posterior angles acute, and the thorax of the female being divided in two parts; the femora and tibiæ are more robust than in the other genera of the family.

In *Myrmosa* the head is subglobose, eyes small and round; the thorax ovate and the anterior wings have one marginal and four submarginal cells. The females of our species appear to be unknown.

In the genus *Methoca* the ocelli are said to be distinct in both sexes, head subglobose in the female, transverse in the male, eyes ovate, thorax trinodose in the female and oblong in the male.

Nothing definite appears to be known of their habits, although they are supposed to be parasitic. Owing to the dissimilarity of the two sexes Latreille considered the male belonging to a distinct genus, *Tengyra*, which was arranged among the Scoliidæ.

I have divided the family into nine genera, in all of which the females are apterous, and may be tabulated as follows:

Antennæ of male flabellate.....1, **Psammotherma.**
Antennæ simple in both sexes.
Eyes ovate, emarginate in the male, entire in the female.....2, **Mutilla.**
Eyes round, polished in both sexes.....3, **Sphærophthalma.**
Eyes large, round; ocelli large; antennæ long and slender; wings hyaline, body unicolorous, shining.....4, **Photopsis.**
Eyes round and polished; thorax binodose; abdomen petiolate, petiole slender and cylindrical at base.....5, **Chyphotes.**
First and second abdominal segments nodose, anterior wings with two submarginal cells, marginal cell wanting.....*6, **Apterogyna.**
Mandibles elongate, arcuate, the maxillary palpi 3-jointed, labial palpi 2-jointed; thorax divided in two parts.....*7, **Bradynobœnus.**
Eyes small, round; head subglobose, mandibles tridentate in the male, unidentate in the female; wings with one marginal and four submarginal cells; margins of the abdominal segments crenate, tridentate at apex. 8, **Myrmosa.**
Eyes ovate, ocelli placed high on the vertex; antennæ filiform, mandibles arcuate in the female; head subglobose; scape of male antennæ very short; wings with one elongate marginal cell which extends nearly to the tip of the wing; three submarginal cells.....9, **Methoca.**

* These are exotic.

The species of this family, so far known to me, may be tabulated as follows:

Genus 1, **PSAMMOTHERMA.** Latr.

Antennæ flabellate ♂ ..... **ajax.**

Genus 2, **MUTILLA** Linn.

MALES.

Antennæ simple.
Eyes ovate, more or less acutely emarginate within.
Abdomen more or less fulvous or ferruginous.
Head and thorax black, with pubescence entirely black.
Abdominal segments fringed at apex with ferruginous pubescence, first segment black ..... **hexagona.**
Abdominal segments fringed at apex with golden pubescence, first segment black ..... **Grotei.**
Head, thorax and base, and apex of abdomen black; abdomen clothed with bright scarlet pubescence ..... **terminata.**
Abdominal segments fringed at apex with golden pubescence.. **oaxaca.**
Head, thorax and basal segment of abdomen black, the remaining segments ferruginous, apical margins fringed with ferruginous pubescence. **ordinaria.**
Abdominal segments fringed at apex with silvery white pubescence. **copano.**
Head black; pro- and mesothorax and abdomen ferruginous; segments fringed at apex with black pubescence ..... **Sayi.**
Head black; thorax and abdomen ferruginous, fringed with ferruginous pubescence ..... **floridensis.**
Head and thorax black above; abdomen rufo-castaneous; segments fringed with fuscous ..... **eximia.**
Head and thorax above reddish brown; abdomen ferruginous; segments fringed at apex with black pubescence ..... **promethea.**
Abdomen rufous, with long rufous pubescence ..... **rufa.**
Head and thorax black; abdomen ferruginous, fringed with black pubescence ..... **contracta.**
Head ochraceous, thorax black, mesothorax brown; abdomen ferruginous; segments fringed at apex with whitish pubescence ..... **senex.**
Black; head thinly covered with white pubescence, apical margins of abdominal segments sparsely fringed with white pubescence; wings fuscous ..... **nana.**
Abdomen black, banded with silvery pubescence.
Head with short gray pubescence; second segment of abdomen subopaque, with large, coarse punctures; first and second segments with an apical band of silvery pubescence, remaining segments with mixed, black and silvery pubescence ..... **scrupea.**
Head with long, dense, silvery pubescence; pleura and metathorax also silvery; second segment of abdomen shining, with less coarse punctures; first segment entirely and broad apical margin of second segment silvery, the whole abdomen with long, silvery pubescence. **gracilis.**

Black; head with white pubescence; metathorax, basal segment of abdomen and second, with silvery white pubescence; wings hyaline, clouded at apical margins ..... **sapiens.**

FEMALES.

Eyes ovate.

First abdominal segment small, nodiform, more or less constricted at apex.

Head ochraceous; body ferruginous; abdomen above with two large black spots, apex ochraceous ..... **cubensis.**

Head ferruginous, vertex golden, occiput black; abdomen without black spots, apex ochraceous ..... **cinaloa.**

Head fuscous, vertex slightly golden; abdomen ferruginous, apex of second segment with cinereous band; body with erect black hairs; size minute ..... **yucatana.**

First abdominal segment gradually dilated to apex and sessile with base of second segment.

Head black; thorax ferruginous; abdomen black, ornamented with pale golden bands and stripes ..... **cajaca.**

Head ferruginous.

Size medium; legs black ..... **ornativentris.**

Head black, with erect hairs; vertex with depressed golden pubescence; thorax ferruginous, with long, sparse, erect, black hairs; abdomen black, second segment with three spots of silvery pubescence, the posterior pair large and transverse ..... **floridana.**

Head ochraceous and black; thorax brown, elongate, with a tubercle on each side beyond middle; two ochraceous spots on thorax above; abdomen black, spotted with ochraceous, second segment having two spots at base and a broad ochraceous band at apex, interrupted medially ..... **tolteca.**

Small; head and mesothorax above and three spots on second abdominal segment, posterior pair large and a spot at tip of abdomen silvery white ..... **trisignata.**

Size small; legs ferruginous ..... **leona.**

Head ochraceous ..... **pallicaps.**

Head, thorax and abdomen ferruginous, apical margins fringed with pale golden pubescence ..... **dubitata.**

Apical margin of second abdominal segment black, fringed with pale golden pubescence ..... **enterpe.**

Prothorax, apical half of first and apical margin of second abdominal segments with pale golden pubescence ..... **peculiaris.**

Head much wider than thorax; basal segment of abdomen large, second and following segments stained with castaneous at middle **thoracica.**

Head twice as broad as thorax, shining; second abdominal segment with two yellow spots on disc ..... **rutilans.**

Head wider than thorax, apical margin of second abdominal segment fringed with pale yellowish pubescence ..... **pateola.**

Ferruginous, metathorax thinly clothed with erect glittering white hairs; apical margins of abdominal segments fringed with pale pubescence ..... **parvula.**

Genus 3, **SPHÆROPHTHALMA** Blake.

MALES.

Eyes circular, convex, polished.

First abdominal segment small, nodiform, more or less constricted at apex.

Head and thorax black, with black pubescence.

First and second abdominal segments black, remainder with long dense fulvous pubescence.

Large; length 21 mm..... **orcus.**

Small; length 8.5 mm..... **zelaya.**

Second abdominal segment reddish brown with a broad orange band on posterior half, slightly interrupted medially; first segment black with a reddish brown band remainder black.. **castor.**

Second abdominal segment ferruginous; apical segments darker and fringed with blackish pubescence..... **macer.**

Head larger than usual, quadrate; vertex very broad behind the eyes; marginal cell lanceolate, pointed at apex..... **scæva.**

Head small and of the usual form.

Second abdominal segment bright orange ferruginous *above and beneath*, with short coccineous pubescence; apical margin fringed with black pubescence; first segment flattened; marginal cell short, broadly truncate at tip..... **bexar.**

Head and thorax black, second and following segments of abdomen dark ferruginous; apical margins fringed with black hairs. **admetus.**

Second abdominal segment ferruginous *above and beneath*, generally paler on posterior half, sometimes forming two large yellow spots, with golden pubescence, except at extreme base and apex where it is black; first segment nodose; marginal cell truncate at tip..... **fenestrata.**

Head, thorax, petiole and second abdominal segment ferruginous; third, fourth and fifth segments black, apex silvery..... **creon.**

Second abdominal segment *above* yellow, with long, dense, yellow pubescence, beneath black; remainder of abdomen above with long black pubescence; first segment nodose; marginal cell truncate at tip..... **macra.**

Second abdominal segment above ferruginous, with black pubescence, fuscous at base and apex and slightly so medially; beneath black; first segment nodose; marginal cell broadly rounded at apex..... **canella.**

Head and thorax black, sparsely mixed with glittering pubescence.

Second segment of abdomen ferruginous, with black pubescence, beneath with a broad, longitudinal, black band; wings fuscous, marginal cell broad and broadly rounded at apex... **macilenta.**

Abdomen, except first segment, ferruginous, with black pubescence, dense on apical margin of segments; apical segment with pale golden pubescence..... **obscura.**

Head with black hairs, except a tuft of reddish golden pubescence on the vertex; wings blackish, with a violet reflection..... **vestita.**

Head and thorax black; thorax with golden fulvous pubescence above, second and following segments of the abdomen bright ferruginous; wings blackish, paler about the middle..... **arsuta.**

Black; head and thorax with long white pubescence; apical segments of the abdomen with long, coarse, whitish pubescence; wings fuliginous; three submarginal cells..... **Sackenii.**

Abdomen black, with pale glittering pubescence; a broad band, more or less distinctly defined, of pale glittering pubescence, behind second segment; wings subhyaline, marginal cell lanceolate, not abrupt at apex..... **gibbosa.**

Head entirely black, mesothorax and scutellum with fulvous pubescence; second abdominal segment with two large apical yellow spots. **bioculata.**

Head and prothorax above, mesothorax and scutellum entirely, with ferruginous or fulvous pubescence.

First and second abdominal segments (except apex) black.

Large; apex of second and the following segments of abdomen with ferruginous pubescence..... **comanche.**

Black; head, thorax and apical half of abdomen with dense fulvous pubescence; robust; wings fuliginous..... **mollissima.**

Black; head, thorax and abdomen, except first and basal half of second segment clothed with long ochraceous pubescence; wings fuliginous..... **ochracea.**

Medium; apex of second and the following segments of abdomen with long, dense, bright fulvous pubescence.... **fulvohirta.**

Black; head and thorax with black pubescence; apical segments of abdomen with long, dense, fulvo-ferruginous pubescence. **chiron.**

Medium; apex of second and the following segments of abdomen with long, dense, bright scarlet pubescence. **coccineohirta.**

Thorax and second abdominal segment scarlet-red, metathorax black; wings blackish violaceous; medium.. **antiguensis.**

Abdomen black; apex of second, the third and two apical segments with dense scarlet pubescence..... **occidentalis.**

Abdomen black, with only the second segment ferruginous above and beneath, and with ferruginous pubescence except at apex. **asopus.**

Abdomen black, second segment yellow ferruginous, with golden pubescence except at apex, remaining segments with mixed, black and golden pubescence..... **hector.**

Head and prothorax above, mesothorax and scutellum entirely, with dense yellowish white pubescence; abdomen dull ferruginous, clothed with black pubescence; second segment yellowish; two apical segments with a patch of yellowish white pubescence..... **monticola.**

Head and thorax black, with black pubescence, second abdominal segment dark ferruginous, apex black..... **hispida.**

Metathorax black; head and prothorax above, scutellum and more or less of metathorax, with fulvous yellow or whitish pubescence.

Abdomen above black, second segment with a broad, transverse, median, dull yellowish band, and the fourth, fifth and sixth segments with a dense, dull, yellowish pubescence; head and thorax above with yellowish fulvous pubescence; wings fuliginous, with a broad, median, subhyaline band..... **iztapa.**

Abdomen above, except extreme base to apex, with a dense, bright scarlet pubescence; head and thorax above with clay-colored pubescence..... **Sumichrasti.**

Abdomen with silvery pubescence; second segment ferruginous, generally with narrow, black, apical margin; three following segments with silvery pubescence, and the two apical segments black, with extreme apex silvery; head and thorax above with silvery pubescence..... **apicalata.**

Abdomen black, basal half of second and the third and fourth segments entirely with dense, pale golden, or yellowish white pubescence; head, prothorax and scutellum with pale golden pubescence; wings dusky, with apical third fuliginous. **azteca.**

Abdomen black, apex of first, base of second, and the third and fourth segments with dense, silvery white pubescence; head, thorax, scutellum, pleura and base of metathorax with silvery white pubescence; wings hyaline, the anterior pair bifasciate with fuscous..... **Wilsoni.**

Head and thorax ferruginous, the former larger than usual, quadrate, the vertex very broad behind eyes.

Abdomen beyond second segment black, with black pubescence; first and second segments ferruginous..... **pennsylvanica.**

Abdomen ferruginous, with golden pubescence; apex of first, second and the following segments blackish..... **auripilis.**

Rufo-fulvous, the pubescence of the abdomen long and dense. **Edwardsii.**

First abdominal segment not nodiform, but gradually dilated towards apex and sessile with base of second segment.

Abdomen black, apical margins of all the segments with a fringe of long, dense, golden pubescence; vertex, pro- and mesothorax, and scutellum with golden pubescence; tegument of prothorax ferruginous..... **propinqua.**

Abdomen black, second segment, except apical margin, yellowish ferruginous, smooth and polished..... **oceola.**

Abdomen ferruginous, second segment paler, all the segments with an apical fringe of black pubescence..... **Sanbornii.**

Abdomen brown, with short golden pubescence; first segment black; second, except narrow basal and apical margins, clay-yellow; head and thorax with short silvery gray pubescence; mesothorax black..... **flavida.**

Abdomen black, with mixed black and silvery pubescence.
Head very large, quadrate, much broader than thorax.....**laticeps.**
Head not broader than thorax.
Abdominal segments with an apical fringe of dense silvery pubescence. **xalapa.**
First and second abdominal segments black, the remainder with dense, pale, golden, or yellowish white pubescence .....**zapoteca.**
Abdomen with long, thin, white pubescence; size minute..... **gila.**

FEMALES.

Eyes circular, convex, polished.
Body black.
First abdominal segment small, nodiform, more or less constricted at apex.
Head, thorax and abdomen black, ornamented with pale golden or silvery spots.
Large; head with a curved line on vertex and thorax, and abdomen with spots and lines, all of pale golden pubescence; second abdominal segment with four polished dull yellow spots, two anteriorly and two posteriorly.....**melanosoma.**
Head, thorax and abdomen, above with long, dense, white pubescence. **Sackenii.**
Head, thorax and abdomen with long, dense, white pubescence; size small. **thetis.**
Fuscous, clothed entirely with very long, dense, pale, ochraceous pubescence, more sparse beneath.....**tecta.**
Black; head narrower than thorax: entirely clothed with long, dense, ochraceous pubescence.....**erudita.**
Abdomen above more or less clothed with dense ferruginous pubescence, not spotted with black.
Abdomen above, except first and base of second segments, ferruginous.
Head broad, quadrate.....**gorgon.**
Head of usual size and shape.....**orcus.**
Nigro-castaneous, margins of abdominal segments fringed with pale golden pubescence.....**tisiphone.**
Nigro-castaneous; head, thorax and abdomen with rusty golden pubescence.....**parmosa.**
Castaneous; head, thorax and abdomen with pale golden pubescence. **veniflca.**
Abdomen above, except first and base of second segment, ochraceous.....**zelaya.**
Second segment of abdomen ferruginous; size small..... **waco.**
Head and thorax above blackish brown; abdomen yellowish ferruginous, base and a band beyond second segment black..**comanche.**
Head and thorax nigro-fuscous, second segment of abdomen with obscure fulvous pubescence.....**texana.**
Rufo-castaneous; head round, thorax and abdomen with yellowish white pubescence.....**erato.**

Black; head rounded, vertex and abdomen clothed with golden pubescence. ..... **auraria.**

Brown-ferruginous; head round; head, thorax and apex of abdomen with moderately dense, white pubescence..... **aroia.**

Fuscous: head round, with whitish pubescence; abdomen with long, silky, golden pubescence ..... **aspasia.**

Head, thorax and abdomen with dense fulvous pubescence; robust. **molliissima.**

Black; densely pubescent, that on the vertex and mesothorax bright ochraceous; abdomen shining..... **andreniformis.**

Black; head, thorax and abdomen, except first, and basal half of second segment clothed with long ochraceous pubescence. **ochracea.**

Head entirely black; thorax and second abdominal segment above yellowish ferruginous, remainder black..... **medea.**

Black; head not as wide as thorax, clothed above, except basal half of second abdominal segment; with ochraceous pubescence. **clio.**

Head, thorax and abdomen with ochraceous pubescence; head as wide as the thorax..... **holotricha.**

Head, thorax and abdomen with ochraceous pubescence; second abdominal segment with two small patches of black pubescence; apical margin black..... **Sicheliana.**

Head and thorax above with ochraceous or ferruginous pubescence.

Femora and base of tibiæ with ochraceous pubescence..... **magna.**

Legs entirely black.

Head broader than thorax, subquadrate..... **aureola.**

Head very large, ferruginous-scarlet; thorax scarlet; abdomen black, second segment scarlet; apical margins of the last three segments fringed with silvery pubescence.. ..... **antiguensis.**

Black; head large, subquadrate, clothed with dense, coarse, sanguineous pubescence above..... **pacifica.**

Abdomen above, except base, ferruginous... ..... **californica.**

Abdomen above, except base, coccineous..... **coccineohirta.**

Second and base of third abdominal segments above, ferruginous.. **creusa.**

Abdomen (as well as head and thorax) above with short, dense, coccineous pubescence; first; base and apex of second and third segments entirely, black..... **occidentalis.**

Head subquadrate, with black pubescence; second abdominal segment with a broad, emarginate band of reddish golden pubescence. **clotho.**

Black; head quadrate, twice as broad as thorax, which is covered with dense yellow pubescence..... **marpesia.**

Ferruginous; head subquadrate, vertex and abdomen with dense, deep, golden pubescence; small..... **phædra.**

Fuscous; head round, with deep golden pubescence; abdomen with dense, reddish golden pubescence; small..... **xenobia.**

Fuscous; head round, clothed with whitish pubescence; second abdominal segment with long, silky, golden pubescence, **aspasia.**

Body brown; head, thorax and second abdominal segment above with dense ferruginous pubescence.

Legs black, with pubescence entirely black; abdomen behind second segment entirely black ..... **bellona.**

Legs black, with mixed black and ochraceous pubescence; abdominal segments fringed at apex with ochraceous..... **segima.**

Body black, more or less clothed with a golden or ochraceous pubescence.

Abdomen ornamented with spots of various shapes and proportions.

Thorax above with a large discoidal black spot.

Abdomen with a large central black spot on second segment, connected with a small spot on each side; behind second segment two large quadrate black spots..... **Cressoni.**

Abdomen with a large trilobate black spot on second segment and a black spot at apex..... **arachnoides.**

Black; head, thorax and abdomen with golden pubescence; second abdominal segment with three black spots..... **luxuriosa.**

Legs and abdomen black; second segment with two large silvery spots almost confluent on the disc..... **formosa.**

Head wider than thorax, subquadrate, posterior angles acute, with golden yellow pubescence above; a triangular spot of golden pubescence at base of second abdominal segment. **salutatrix.**

Legs and second abdominal segment ferruginous, the latter with a median black spot at base and a broad, black, apical band. **balopilas.**

Thorax with anterior portions more or less black.

Head entirely black; second abdominal segment with three black spots, central one large, subovate..... **ariadne.**

Head golden or ochraceous.

Abdomen black; second segment with four dull yellowish spots; head and thorax above bright ferruginous..... **proserpina.**

Ferruginous, vertex and thorax with pale golden pubescence; abdomen clothed with mixed, black and yellow hairs. **mixtura.**

Abdomen golden or ochraceous, with black spots or bands.

Second abdominal segment with three confluent black spots near base, the central one largest.

Metathorax black; head golden; abdomen above golden, with a broad, black band behind middle..... **Nortonii.**

Metathorax ochraceous, with a lateral black patch; head and abdomen above ochraceous, the latter with two large black spots behind middle..... **toluca.**

Rufo-testaceous, prothorax with black, metathorax with pale ochraceous pubescence..... **canina.**

Metathorax pale golden; second abdominal segment black; apical segments pale golden..... **luteola.**

Black; head and thorax with long, suberect, yellowish white pubescence, the latter with an ovate tuft of black on the disc. **vulpina.**

Metathorax orange yellow, with a central black spot; head and abdomen above orange yellow, the latter with a broad, black band behind middle; central black spot at base of second segment very large, lateral spots minute..... ..... **sololа.**

Second abdominal segment with two large, elongate, somewhat oblique spots anteriorly, confluent at base; color of pubescence ochraceous and black; abdomen with a broad, black band behind middle; head entirely ochraceous.

Sumichrasti.

Second abdominal segment with one large black spot at base.

Metathorax pale golden, with a central black spot...**altamira.**

Head, thorax and abdomen black, clothed with reddish golden pubescence; legs black, with black hairs .....**montezumæ.**

Metathorax entirely bright golden; basal black spot on second abdominal segment very large and broad; apical margin also black.....**xalisco.**

Body black and ferruginous.

Head and thorax black, with erect, black and depressed silvery pubescence; apex of metathorax ferruginous, a spot on disc of metathorax and sides of pleura silvery; abdomen pale ferruginous, the segments fringed with silvery white pubescence.....**Ulkei.**

Head entirely black; thorax rufo-ferruginous, with prominent lateral tubercles; second abdominal segment black at base and rufo-ferruginous at apex, beyond which is a broad pale yellowish band; apex of abdomen black.....**nigriceps.**

Head black, thorax ferruginous, apical margin of basal segment and a large, oblong patch on each side of second, and its apical margin with yellowish white pubescence.....**derilicta.**

Black; head wider than thorax, vertex red, with ferruginous pubescence; second abdominal segment with two ovate spots at basal margin .....**verticalis.**

Head with pale ochraceous pubescence; second abdominal segment with a large black spot of black pubescence.....**rubriceps.**

Head and abdomen black, thorax ferruginous; second abdominal segment with a large oblong patch of yellowish white pubescence on each side at its base.....**ferruginea.**

Head blackish, thorax ferruginous; abdomen black; beneath, the segments fringed with silvery pubescence.....**electra.**

Head and abdomen black, thorax and legs ferruginous; second abdominal segment with two ovate pubescent, pale yellow maculæ.

separata.

Black; head not as wide as thorax, with rusty golden pubescence; abdomen with black pubescence; second abdominal segment with four ochraceous maculæ, fourth and fifth segments ochraceous .....**munifica.**

Head and thorax ferruginous; abdomen black; second segment with four rather small yellow spots, two at base and two near apex.

4-guttata.

Head black, with bright golden pubescence; second abdominal segment with a large angular macula on each side at base and a transverse, oblong, subovate macula on each side, near the apical margin, of a reddish yellow..... **pulchra.**

Head black; thorax and abdomen, except base and apical segments, bright brick-red; second segment with a trilobate black spot at the base..... **militaris.**

Body ferruginous.

Second abdominal segment ferruginous, or fusco-ferruginous, with four small yellow spots; two distant on basal margin and two more approximate near apical margin..... **cypria.**

Second abdominal segment ferruginous, with four more or less distinct yellowish spots; two small, on basal margin, and two large, and almost confluent, near apical margin; size rather large. **mutata.**

Second abdominal segment fuscous with two large, rounded, nearly confluent, yellowish or pale ferruginous spots near apical margin; size small..... **scevola.**

Second abdominal segment ferruginous, with a more or less distinct patch of black pubescence on basal middle, from which, sometimes, proceeds an oblique black line; apical margin more or less black..... **ferrugata.**

Second abdominal segment rufous, apical margin and remaining segments fringed with glittering pubescence..... **vesta.**

Second abdominal segment dark rufous, densely punctured, apical margins fringed with whitish pubescence; entire insect clothed with white hairs..... **albopilosa.**

Second abdominal segment ferruginous, its apical margin fuscous; abdomen clothed with scattered, glittering hairs..... **cancellata.**

Black; thorax more or less obscurely red above, with black and white pubescence; thorax bidentate on each side; apical margin of second abdominal segment with long white pubescence. **melancholica.**

Second abdominal segment ferruginous; apical margin blackish, with an uninterrupted fringe of dense white pubescence on middle of apical margin..... **balteola.**

Second abdominal segment castaneous; apical margin and following segments with silvery pubescence; head twice as broad as thorax, a strong acute spine behind the cheeks..... **grandiceps.**

Ferruginous; head subquadrate, wider than the thorax, the four apical segments and the apical margins of the two basal ones rufo-piceous, small..... **frigida.**

Head wider than the thorax, subquadrate, with ferruginous pubescence; thorax with black pubescence; second and following segments of abdomen fringed with black. **macrocephala.**

First abdominal segment gradually dilated at apex and sessile with base of second segment.

Posterior angles of head acutely produced.

Head very large, nearly twice broader than thorax, with two large spines beneath, behind mandibles..... **Robinsonii.**

Head very large, twice as broad as thorax; second abdominal segment with an ovate spot of deep golden pubescence on the disc. **quadridens.**

Head large, a little wider than thorax; cheeks with an acute spine beneath..... **capitata.**

Head subquadrate, as wide as thorax, with two ovate spots of golden pubescence; metathorax with two lateral stripes of golden pubescence, and two similar spots on the second segment of abdomen, black entirely..... **Gabbii.**

Black; head, and a transverse band on the thorax, with bright golden pubescence; second abdominal segment ferruginous, with a large, subovate patch of black pubescence at its base; fourth, fifth and sixth segments with golden pubescence above. **ducalis.**

Head wider than thorax, subquadrate, with coarse, golden pubescence. **leda.**

Posterior angles of head carinate, ending beneath in a short spine.

Head ferruginous, with golden pubescence on vertex; second abdominal segment with two pale yellowish spots..... **lerma.**

Ferruginous; head and thorax with golden pubescence; second abdominal segment with two large testaceous maculæ.. **combusta.**

Head entirely ferruginous, shining; second abdominal segment with two large ferruginous spots, occupying nearly the whole segment above..... **canadensis.**

Ferruginous; head wider than thorax, basal margin of second abdominal segment at middle with bright golden pubescence and two ovate spots of same color near its apical margin.. **blandina.**

Posterior angles of head carinate, unarmed beneath.

Second abdominal segment above yellowish, a large spot on basal middle, a dot on each side and broad apical margin, narrowed laterally, black; head and thorax black, with golden pubescence. **bisignata.**

Black; vertex and prothorax with bright rufo-fulvous pubescence; second abdominal segment with two ovate spots and its apical margin with bright yellowish pubescence..... **araneoides.**

Second abdominal segment above ferruginous, with a large black spot at base and another at apex; head with dense golden pubescence. **connectens.**

Second abdominal segment above ferruginous, with three spots at base (middle one largest) and broad apical margin fuscous; head with dense ochraceous pubescence ..... **contumax.**

Second abdominal segment above golden yellow, with three black spots, middle one large and longitudinal; head ferruginous, occiput black..... **gothica.**

Second abdominal segment above silvery, with three black spots towards base, middle one large and longitudinal; head ferruginous, occiput with two black spots..... **ixucar.**

Second abdominal segment above golden yellow, with three black spots at base and large transverse one at apex; head very large, quadrate, ferruginous..... **chiapa.**

Second abdominal segment above black, with a pale golden cross (extending the entire length and width of the segment. ..... **cruciata.**

Ferruginous; head wider than thorax, subquadrate, clothed with glittering, pale, golden pubescence; abdomen with pale golden, its apical margin and remaining segments with blackish pubescence..... **præclara.**

Second abdominal segment above fuscous, with a pale golden cross (the longitudinal bar not well defined medially); head entirely ferruginous ..... **petricola.**

Second abdominal segment above blackish, with a transverse pale golden band, interrupted medially; head ferruginous, vertex with pale golden pubescence..... **auripes.**

Second abdominal segment above blackish, with transverse, sinuate, pale golden band; head fuscous, vertex with a pale golden pubescence; size minute..... **minutissima.**

Ferruginous; head round, as wide as thorax; abdomen thinly clothed with long, erect, whitish hairs; apical margins of segments above with white pubescence, small..... **pygmæa.**

Head rounded, not as wide as thorax, ferruginous; abdomen black, sparsely clothed with white hairs; apical margins fringed with white pubescence, small..... **virgunculæ.**

Second abdominal segment above black, with two round, *distant*, yellowish spots near apical margin, which is narrowly pale golden, and two approximate ferruginous dots on basal margin; head black, face and cheeks ferruginous..... **psammadroma.**

Second abdominal segment above ferruginous, with apical margin more or less broadly black; head entirely ferruginous, carinæ on posterior angles not prominent..... **similima.**

Posterior angles rounded, not carinate.

Head and thorax black, reddish brown above; second abdominal segment bright ferruginous; apical segments fringed with silvery pubescence..... **brazoria.**

Head, thorax and second abdominal segment above entirely ferruginous..... **montivaga.**

Genus 1. **PSAMMOTHERMA** Latr.

This is distinguished from all the other genera of Mutillidæ by the male antennæ being flabellate. The neuration of the anterior wing is much like that of the first division of the next genus (fig. 1), except that the third submarginal cell is not hexagonal, but rather subtriangular, shaped considerably like that of *occidentalis* (fig. 2).

This is only the second species of this genus so far known, the first being from Senegal, the *P. flabellata* Latr., which differs by the second abdominal segment being ferruginous.

Fig. 1.

Fig. 2.

Psammotherma ajax Blake.

Male.—Black; head round, densely punctured, mouth clothed with pale golden hairs, mandibles black; antennæ: scape finely punctured, clothed with pale glittering hairs; flagellum consisting of eleven joints, ten of which are strongly bipectinate; eyes ovate; thorax elongate quadrate, rounded in front, pro- and anterior half of the mesothoracic disc rufo-ferruginous, coarsely punctured, the latter having two longitudinal, deeply-impressed lines, scutellum black, rounded, closely punctured, post-scutellar groove distinct, metathorax roundly, truncate, coarsely and deeply reticulate; tegulæ rufo-ferruginous, produced posteriorly, finely punctured; wings ample, fuliginous, paler towards the base of the externo-median cell; marginal cell ovate, rounded at, and narrowed to tip, first submarginal large, second elongate subquadrate, acutely pointed towards the base, its apical nervure sinuate, and receiving the first recurrent at middle, third subhexagonal receiving the second recurrent a little before the apical nervure, which is sinuate, its external angles with abbreviated nervures; legs black, clothed with glittering hairs, calcaria pale; abdomen ovate, basal segment campanulate, closely punctured, its apical margin clothed with pale yellowish pubescence, second segment shining, moderately closely punctured, interspersed with a few erect hairs, the apical margin adorned with a band of pale golden pubescence; apical segments black. Length 12 mm.; expanse of wings 22.5 mm.

Hab.—Florida. Harris collection.

This species agrees with Fabricius' description of *M.* (*Psammotherma*) *flabellata*, while St. Fargeau describes the second abdominal segment as rufous. They can scarcely be identical, the latter species being from Senegal.

Genus 2, **MUTILLA** Linn.

Male.—Head usually transverse and compressed, eyes moderately large, ovate, more or less emarginate, but in a few species they are entire. The ocelli placed in a triangle on the vertex. The antennæ subfiliform, gradually tapering to the apex, which is acuminate, inserted on the sides of the base of the clypeus. The mandibles arcuate and tridentate, but varying occasionally in this respect. The prothorax extending laterally to the origin of the wings; the tegulæ usually very large. The anterior wings with one marginal and three submarginal cells, the marginal usually of a semi-circular form; the three submarginal cells subequal, the second and third each receiving a recurrent nervure, the second nervure being almost obsolete, as well as the third transverso-cubital nervure, from the middle of which emanates a more or less abbreviated nervure, never extending to the apex of the wing; in a few exotic species the third submarginal cell is obsolete. The legs moderately long and pubescent. Abdomen ovate, the first segment subpyriform or sometimes petiolate, the second campanulate, and the apex curved.

Female.—Head suborbiculate, or subquadrate, sometimes enormously developed and armed beneath with two or more formidable spines; the ocelli always wanting, the eyes ovate, entire; mandibles arcuate and usually unidentate. Thorax longitudinal and truncate interiorly and posteriorly; in some exotic species much narrowed behind. Legs more robust than in the male and armed exteriorly with spines. Abdomen similar to the male.

The species, which are not numerous, may be divided into three divisions, viz.:

DIVISION I.

Neuration of anterior wing as represented by figure 3; the first abdominal segment small, but gradually dilated to apex, where it is sessile with the base of second segment, as in figures 4 and 5.

Fig. 3.

Fig. 4.

Fig. 5.

Mutilla hexagona Say.

Male.—Head black, transversely rounded, not as wide as the thorax, closely punctured, thinly clothed with short, erect, silvery hairs; scape of antennæ tufted with silvery pubescence, flagellum blackish fuscous; eyes ovate, emarginate, ocelli distinct; mandibles black. Thorax black, closely punctured and having four slightly impressed, longitudinal lines on the disc, thinly clothed with erect pale hairs, more dense on the prothorax; scutellum rounded; metathorax roundly truncate, with reticulate punctures, dorsal groove not extending to the middle; wings purplish fuliginous, marginal cell ovate rounded at apex; first submarginal cell elongate quadrate, narrowed towards base, second submarginal smaller and sharply pointed towards the base, receiving the first recurrent nervure at middle, its apical nervure arcuate; third submarginal hexangular, receiving the second recurrent nervure a little beyond the middle, its apical angles with abbreviated nervures; a transparent line crosses the first submarginal cell at right angles to the costa and continues longitudinally through the second and third submarginal cells, and a similar spot in the third discoidal cell; tegulæ polished. Legs black, clothed with whitished hairs, calcaria white. Abdomen: basal segment black, finely punctured; second segment dark honey yellow, finely and remotely punctured, its apical margin and remaining segments rufo-fuscous, fringed on the apical margin with pale ferruginous pubescence, ventral surface same as above, with the exception of a dark stain as base of second segment. Length 13-18 mm.; expanse of wings 18-25 mm.

Hab.—Indiana, Missouri, Kansas.

var. *α* BRIAXUS Blake, has the apical margins of the abdominal segments more densely clothed with *black* pubescence, and having the dorsal groove of the mesothorax more distinct.

var. *β* VIGILANS Say, has the marginal cell truncate at tip, the dorsal groove of the metathorax extending beyond the middle. Abdomen: the second segment with large remote punctures, bright rufous, the basal and apical margins black.

Since the publication of the Synopsis (1871) much more material has been collected from all parts of North America, among which I have been fortunate in obtaining *M. hexagona* of Say. On close examination *briaxus* and *vigilans* prove to be only varieties of *hexagona*.

Mutilla Grotei Blake.

Male.—Head and thorax black, head not as wide as the thorax, rounded, closely punctured, clothed with short black hairs; antennæ blackish, scape rufous, clothed with glittering pubescence; eyes ovate, emarginate. Thorax robust, subquadrate, rounded behind, thinly clothed with short black hairs, pro- and mesothorax closely punctured, the latter elevated, metathorax coarsely reticulate, abruptly rounded; wings ample, pale fuliginous, marginal cell large, sublanceolate, gradually rounded to tip, three distinct submarginal cells, the first nearly as long as the marginal, second not quite as long as the first, receiving the first recurrent nervure in the middle. Legs black, clothed with fulvous hairs, calcaria whitish. Abdomen elongate ovate, basal segment black, closely punctured,

thinly clothed with brownish hairs, second segment fulvous, finely punctured, having on the disc a longitudinal black patch, extending nearly to the apical margin, the remaining segments clothed with dense golden fulvous pubescence; under side clothed with short fulvous hairs. Length 15 mm.; expanse of wings 25.5 mm.

Hab.—Colorado.

Mutilla oajaca Blake.

Male.—Head and thorax black, closely and deeply punctured, clothed with scattered pale yellowish pubescence; eyes large, ovate, emarginate; antennæ black; metathorax rounded, posteriorly abrupt, with a scattered black pubescence; wings blackish, paler towards the base, marginal cell moderately long, rounded at tip, extending beyond the third submarginal, three submarginal cells, the first about as long as the marginal, the second shorter and narrowed towards the first, receiving the first recurrent nervure about the middle, the third submarginal clearly defined, subpentagonal. Legs black, clothed with long, pale, yellowish pubescence. Abdomen elongate ovate, ferruginous above and beneath, finely punctured, apical margins of all segments fringed with bright fulvous pubescence; basal segment black. Length 15 mm.; expanse of wings 21 mm.

Female.—Head deep black, densely punctured, wider than the thorax, with scattered, erect black hairs; eyes large, ovate, entire; antennæ black. Thorax ferruginous, elongate quadrate, sides slightly concave; metathorax abruptly truncate behind. Legs shining black, clothed with glittering hairs. Abdomen ovate, black, apical margin of basal segment fringed with pale golden pubescence, on the dorsal surface of second segment there are two elongate quadrate patches of dense, pale, golden pubescence, extending half way to the apical margin, which is ornamented with a broad band of pale golden pubescence having the interior margin sinuate; the remaining segments have a patch of pale pubescence on each side, together forming a V shaped line to the apex; beneath, the margins of the segments are fringed with pale glittering hairs. Length 13 mm.

Hab.—Mexico. Prof. F. Sumichrast.

In some individuals the head is ferruginous.

Mutilla ornativentris Cresson.

Female.—Rufous, very densely punctured. Head transverse, not quadrate, broader than the thorax; the mouth with long ochraceous pubescence; eyes moderate, ovate, entire; mandibles blackish; antennæ blackish, sericeous, the three or four basal joints rufous. Thorax elongate, narrow, somewhat rounded in front, the sides subparallel, a little strangulated about the middle, and again widened posteriorly, the sides and behind abrupt; upper surface with a short fuscous pubescence, the sides with a very short, fine, dense, cinereous pile. Legs rufous, with ochraceous pubescence; tips of the femora, most of the tibiæ and the tarsi, fuscous. Abdomen elongate, ovate, much narrowed to the apex, blackish above, reddish beneath; all the segments with a broad apical band of dense silvery cinereous pubescence, the anterior middle of which is more or less sinuate or emarginate; large basal segment, with a large patch of silvery sericeous pubescence, sometimes obsolete on each side at base; the apical segments above are

sometimes tinged with reddish, and in one specimen the large basal segment above is tinged with reddish; the ventral segments have an apical fringe of silvery cinereous pubescence. Length 9.5–11 mm. (Cresson.)

Hab.—Southern and Western States.

Mutilla floridana Blake.

Female.—Head round, black, vertex clothed with pale golden pubescence, interspersed with scattered erect black hairs; eyes ovate. Thorax ovate, narrowed posteriorly, rufo-ferruginous, closely punctured, the mesothorax produced laterally into obtuse tubercles, and bearing long, erect, black hairs, metathorax abruptly truncate. Legs black, except the posterior femora, which are rufo-fuscous, clothed with pale hairs, intermediate and posterior tibiæ armed with short strong spines. Abdomen ovate, black, sparsely clothed with long, erect, black hairs, basal segment campanulate, clothed with pale golden pubescence, second segment having at the base a round spot of pale golden pubescence, and two similarly clothed subquadrate lateral spots at the apical margin; under side of second segment shining, finely punctured, ventral segments fringed with pale glittering pubescence. Length 9 mm.

Hab.—Florida. Harris collection.

This may be a variety of *M. trisignata*, but is easily distinguished by the shape and color of the thorax, and the basal segment of the abdomen not being petiolate.

Mutilla toltecа Blake.

Female.—Head rounded, wider than the thorax, closely and finely punctured, densely clothed with fine, pale golden pubescence; cheeks and a patch behind each eye black; eyes ovate, large; antennæ and mandibles dark ferruginous, tips of the latter black. Thorax ovate, narrowed behind, closely reticulate, dark ferruginous, anterior margin black, with a small ovate tubercle on each side. mesothorax with two small irregularly defined patches of pale golden pubescence, behind each of which is a small obtuse tooth; metathorax rounded

posteriorly, with two lateral stripes of pale golden pubescence. Legs ferruginous, thinly clothed with glittering hairs; calcaria whitish. Abdomen ovate, suddenly narrowed to apex, basal segment subcylindrical, densely clothed with pale golden pubescence, mixed with scattered erect pale hairs; second segment densely punctured, dark ferruginous on the sides and anterior margin, near which are two ovate, exteriorly emarginate maculæ of pale golden pubescence, behind which the dorsal surface of the segment is nearly black; on the apical margin is a band of pale golden pubescence, deeply emarginate internally at the middle, and which extends along the under side of the segment to the base; the third segment has a band of the same, with a small triangular, dark ferruginous space at middle; the remaining segments banded in the same manner, all having lateral blackish patches; apical segments closely punctured; under side of second segment paler than above, closely punctured, and having a central longitudinal carina. Length 8.5 mm.

Hab.—Mexico. Prof. F. Sumichrast.

Mutilla trisignata Blake.

Female.—Black, head round, clothed with dense, pale, golden pubescence, interspersed with scattered, erect, black hairs; eyes ovate. Thorax ovate, suddenly narrowed posteriorly, coarsely punctured, the disc densely clothed with pale golden pubescence, the front and sides bearing long black hairs, metathorax truncate. Legs black, thinly clothed with pale hairs, intermediate and posterior tibiæ armed with spines. Abdomen ovate, petiolate, basal segment finely punctured, the disc thinly clothed with pale golden pubescence, second and following segments clothed with dense black pubescence, the former bearing three round spots of pale golden pubescence, the one at base small, the others larger and placed laterally near the apical margin; apex with a small spot of pale pubescence; under side of second segment coarsely punctured, ventral segments fringed with pale glittering hairs. Length 9 mm.

Hab.—Florida. In the Harris collection.

Mutilla Promethea Blake.

Male.—Rufo-ferruginous, head round, closely punctured, face below the line of the eyes black, clothed with obscure yellowish hairs, eyes large, ovate, emarginate, mandibles black, with a rufous dash before the tips, which are bidentate. Thorax elongate subquadrate, rounded in front, thinly clothed with obscure rufous pubescence, closely punctured, the mesothorax with two deeply impressed longitudinal lines, metathorax rounded, coarsely reticulate; tegulæ finely punctured, fuscous; wings ample, fuliginous, marginal cell elongate ovate, truncate at tip, second submarginal subquadrate, pointed towards base, receiving the first recurrent nervure at middle, third hexagonal, receiving the second recurrent beyond the middle. Legs black, thinly clothed with pale hairs. Abdomen ovate, basal segment campanulate, black, finely punctured, second and following segments rufo-ferruginous, finely punctured, the apical margins fuscous, fringed with blackish pubescence; under side same as above. Length 14 mm.; expanse of wings 25.5 mm.

Hab.—Louisiana.

Mutilla contracta Say.

Male.—Body entirely black beneath, inclusive of the feet; above, ferruginous yellowish. Head black below the line of the eyes; metathorax, petiole, anterior and lateral declivities of the abdomen black; anterior half of the first segment of the tergum black; wings blackish fuliginous, somewhat paler in the middle; second cubital cellule wide beneath and contracted, but not angulated at the radial cellule; third cubital cellule so much contracted at base that its extreme nervure is opposite to and joins the recurrent nervure. Length about half an inch; 13 mm. (Say.)

Hab.—Arkansas and Missouri.

Mutilla Sayi Blake.

Male. Head transverse, rounded, black, moderately punctured, face thinly clothed with whitish pubescence; antennæ piceous, scape clothed with glittering pubescence; eyes large, ovate emarginate; mandibles dark rufous before the tip; thorax robust, ovate, narrowed posteriorly, pro- and mesothorax rufous, closely punctured, the latter bearing three discal, longitudinal, slightly impressed lines;

scutellum finely punctured; metathorax roundly truncate, coarsely reticulate, dorsal groove not extending to the middle; sides closely punctured; tegulæ ovate, minutely punctured; wings fuliginous, marginal cell elongate ovate, obliquely truncate at tip, first submarginal long, narrowed to base, second similar in form and pointed towards base, its apical nervure arcuate, third irregularly hexagonal, its outer angles with abbreviated nervures; legs black, thinly clothed with glittering hairs, calcaria white; abdomen ovate, narrowed to apex, basal segment black, closely punctured, subsessile with the second, which is bright ferruginous, finely punctured, the punctures becoming finer and denser at sides, apical margin blackish, fringed with black pubescence; segments dark ferruginous, finely punctured, fringed with brownish black pubescence, ventral surface same as above. Length 12 mm.; expanse of wings 19 mm.

Hab.—Texas. Belfrage.

Mutilla senex Guér.

Male.—Head roundly transverse, densely clothed with appressed, pale golden, or ochraceous pubescence; scape of antennæ pale rufous, clothed with pale glittering pubescence, flagellum pruinose, mandibles ferruginous, tipped with black; eyes ovate, acutely emarginate within, ocelli prominent; thorax robust, ovate, finely and densely rugose; prothorax fusco-testaceous; metathorax roundly truncate, castaneous, coarsely reticulate; sides fusco-testaceous, coarsely punctured, entire thorax thinly clothed with short, erect, pale hairs; legs castaneous, clothed with moderately long, pale, glittering hairs, calcaria pale; wings pale fuscous, paler towards the base, three submarginal cells, marginal cell broadly ovate, first submarginal subtriangular, pointed towards base; second smaller and sharply pointed towards the first, and receiving the first recurrent nervure a little beyond the middle; third submarginal hexagonal, its basal nervure arcuate; tegulæ honey yellow, smooth and very convex; abdomen ovate, narrowed to apex; basal segment rufous, second segment fulvous, shining, finely and remotely punctured, thinly clothed with short, pale, erect pubescence; remaining segments rufous; apical margins fringed with pale golden pubescence above and beneath. Length 14 mm.; expanse of wings 23 mm.

Hab.—Cuba.

Mutilla floridensis Blake.

Male.—Head transverse, not as wide as thorax, black, coarsely punctured, face clothed with whitish pubescence, longer and denser about the mouth; antennæ piceous, scape clothed with glittering hairs; eyes ovate, acutely emarginate; thorax robust, ovate, pro- and mesothorax ferruginous, closely punctured, the latter bearing two discal, longitudinal, faintly impressed lines, apical margin black; scutellum rounded, punctured; metathorax rounded, coarsely reticulate, black at apex; tegulæ black, large, polished; wings moderate, fuliginous, marginal cell ovate, obliquely truncate at tip, first submarginal long and narrow, second long, pointed at base, receiving the first recurrent a little before the middle, third irregularly hexagonal, its outer angles with abbreviated nervures; legs black, thinly clothed with glittering hairs, calcaria white; abdomen ovate, narrowed to apex, ferruginous, finely punctured, apical margins of all the segments fringed with ferruginous pubescence, under side of thorax black, coarsely punctured, a ferruginous spot between anterior and middle coxæ. Length 13 mm.

Hab.—Florida. Three specimens.

This species is closely allied to *Sayi*, and may be only a variety; it differs, however, in having the basal abdominal segment ferruginous, and disc of metathorax the same color.

Mutilla eximia n. sp.

Male.—Head rounded, not as wide as thorax, clothed with erect pale hairs; mandibles castaneous, scape of antennæ ferruginous, flagellum pruinose; eyes ovate, very finely reticulate; thorax ovate, pro- and mesothorax black above, rugose, clothed with pale yellowish pubescence; metathorax rufous, closely punctured, pectus black; legs dark fuscous, thinly clothed with pale hairs; wings fuscous, paler about the middle, marginal cell ovate, truncate at tip, first submarginal cell as large as the marginal, second submarginal subtriangular, receiving the first recurrent nervure near the base, third submarginal subpentagonal, its outer nervure sinuate and confluent with the second recurrent; tegulæ castaneous, finely punctured; abdomen elongate ovate, rufo-castaneous, basal segment petiolate, closely punctured, clothed with erect pale hairs; second segment finely punctured, paler on its apical half, thinly clothed with erect fuscous hairs; apical margins clothed with fuscous, mixed with pale glittering hairs; ventral surface same as above. Length 8 mm.; expanse of wings 13 mm.

Hab.—Arizona.

Allied to *M. floridensis* Blake, but can be distinguished by the thorax being black above.

Mutilla leona Blake.

Female.—Head round, as wide as the thorax, ferruginous, closely covered with elongate punctures; mandibles ferruginous, the tips black; eyes large, ovate, entire; thorax quadrate, ferruginous, closely punctured, lateral declivities smooth, metathorax coarsely reticulate, abruptly truncate; legs rufo-testaceous, thinly clothed with pale hairs, calcaria pale; abdomen ovate, black, clothed with appressed black pubescence, basal segment testaceous, its apical margin fringed with pale golden pubescence; second segment having two short longitudinal stripes of pale golden pubescence; placed laterally near the base; apical margin and remaining segments, except the middle of the third and fourth, clothed with pale golden pubescence. Length 5.5 mm.

Hab.—Mexico. Prof. F. Sumichrast.

Mutilla pallicepa Cresson.

Female.—Head densely clothed with pale ochraceous pubescence; mouth and antennæ rufo-piceous, the latter blackish towards the tips; thorax densely and roughly punctured, blackish brown above, clothed with reddish pubescence, beneath and behind rufo-piceous, sides without distinct tubercles; pleura concave; metathorax subquadrate, scarcely narrowed behind, the posterior face rather abrupt, the lateral margins dentate; legs rufo-piceous, clothed with ochraceous pubescence; the tibiæ with a row of long acute spines; abdomen subovate, much narrowed towards the tip, convex above, closely punctured; basal segment small, somewhat campanulate, black, with the posterior margin densely clothed with ochraceous pubescence, the base with a stout, obtuse tubercle on each side; second segment large, rufo-ferruginous, thinly clothed with ochraceous pubescence; on the basal middle a subquadrate black patch, slightly margined on each

side with ochraceous, the apical margin densely clothed with ochraceous pubescence, margined before with black, which is deeply crenulated behind, especially on the middle; remaining segments densely clothed with ochraceous pubescence, with a large patch of black pubescence on the disc of the third, fourth and fifth segments, largest on the third segment; beneath ferruginous, the apical margins of the segments fringed with ochraceous pubescence. Length 10 mm. (Cresson.)

Hab.—Cuba.

Mutilla dubiatta Smith.

Female.—Ferruginous, the eyes, flagellum and tips of the mandibles fusco-testaceous; thorax, as well as the head, closely and strongly punctured; the sides of the former parallel, or in some specimens slightly widest posteriorly, tips of the femora and tibiæ slightly fuscous; abdomen ovate, the apical margins of the segments have faciæ of silvery white pubescence; beneath ciliated with similar pubescence. Length 6.5–11 mm. (Smith.)

Hab.—Florida, Georgia, Colorado.

This species in coloring corresponds with *M. ferrugata* of Fabricius, but the thorax is of quite a different form to that of the insect which is considered to represent that species; in the present species the thorax is more elongate and the sides nearly parallel; in the other it is shorter, and gradually narrows towards the abdomen.

Mutilla euterpe Blake.

Female.—Ferruginous; head round, finely and closely punctured, face deeply excavate at insertion of antennæ; eyes ovate, finely reticulate; antennæ fuscous flagellum pruinose, scape finely punctured; mandibles dark ferruginous before the tips; thorax elongate-quadrate, emarginate at sides; pro- and metathorax rounded, the former scarcely as wide as the latter, closely and deeply punctured, metathorax abruptly truncate, stained with fuscous at apex; flanks of mesothorax smooth; legs black, thinly clothed with pale pubescence; intermediate and posterior tibiæ feebly spined, calcaria white; abdomen ovate, basal segment black, second minutely punctured; apical margin broadly black, wider at middle on disc, bearing a short longitudinal line of pale golden pubescence; apical margin fringed with similar pubescence, third segment black, apical segments fusco-ferruginous, fringed with hairs of the same color. Length 12 mm.

Hab.—Florida.

This species is easily recognized by the form of the thorax; it is allied to *fidicula* Smith, which, however, has the abdomen longitudinally rugose.

Mutilla rufa St. Farg.

Male.—Rufo-ferruginous; head pubescent, face black, reddish on the vertex and between the eyes; vertex with blackish hairs; antennæ black; thorax black beneath, reddish above and on the sides, hairs rufo-griceous; abdomen ferruginous, pubescent; first segment and posterior margins of all the segments blackish; second nearly naked, hairs rufo-griceous; legs black, clothed with silvery hairs; wings blackish violet, the first submarginal cell having a transverse.

transparent line extending in an angle to the costa; second and third submarginal and third discoidal cells having a similar line. Length 16 mm.; expase of wings 24 mm. (St. Farg.)

Hab.—Pennsylvania, Atlantic States.

DIVISION II.

Neuration of anterior wing as represented by figure 6; the first abdominal segment small, subnodiform, or cylindrical as in figures 7 and 8.

Fig. 6.

Fig. 7.

Fig. 8.

Mutilla scrupea Say.

Male.—Black; head and thorax covered with coarse confluent punctures, thinly clothed with scattered, pale yellowish hairs; antennæ and mandibles black; eyes ovate, emarginate; thorax: anterior angles of prothorax subacute sutures of the meso- and metathorax deeply impressed, the latter very coarsely reticulate; wings subhyaline, apical margins slightly clouded, marginal cell sublanceolate, first submarginal small, second large, receiving the first recurrent nervure near the apex, third irregularly pentagonal, its anterior angles with short nervures, second discoidal cell large; legs black, thinly clothed with glittering hairs; abdomen ovate, basal segment short, armed on each side at its base with a stout tooth, the under side having a longitudinal carina, terminating anteriorly in a tubercle; second segment covered with large, deep punctures, apical margin fringed with silvery pubescence; the remaining segments having a few scattered, short, silvery hairs; under side same as above; lateral sutures distinct. Length 9 mm.; expanse of wings 16 mm.

Hab.—Eastern States. Collection of Mr. Edward Norton.

Mutilla gracilis Smith.

Male. Black; head clothed with silvery pubescence; wings hyaline, apical margin clouded, marginal cell elongate ovate; first and apical margin of second abdominal segment clothed with silvery pubescence; eyes emarginate. Length 7 mm.; expanse of wings 13 mm. (Smith.)

Hab.—Texas, Mexico, Brazil.

Mutilla cubensis Blake.

Female.—Rufo-testaceous; head rounded, clothed with dense, pale golden pubescence; scape of antennæ rufous, flagellum piceous; eyes ovate, prominent; thorax elongate ovate, narrowed posteriorly, coarsely punctured, meso- and metathorax armed at the sides with a tooth, those on the latter acute, metathorax roundly truncate; legs rufo-testaceous, the intermediate and posterior tibiæ

armed with a row of spines, tarsi clothed with pale golden pubescence; abdomen ovate, basal segment cylindrical, clothed with dense, pale pubescence; second segment densely punctured, with a cordate black patch at the base; third segment clothed with dense, pale golden pubescence, with an ovate black patch on the middle; the remaining segments clothed with dense, pale pubescence; ventral segments fringed with pale hairs; under surface of entire insect paler than above. Length 8.5 mm.

Hab.—Cuba.

Mutilla cinaloa Blake.

Female.—Dark ferruginous, head rounded, wider than the thorax, face and vertex clothed with deep golden pubescence, posterior margin black; antennæ: scape and first joint of flagellum ferruginous, the latter fuscous; eyes ovate, large; thorax elongate ovate, narrowed posteriorly, closely reticulate, margins of the disc black, metathorax gradually rounded, armed on each side in front with an acute tooth; legs ferruginous, clothed with a few glittering hairs; abdomen ovate, second segment closely punctured, sides of apical margin with dark stains, the remaining segments clothed with deep golden pubescence, having a denuded central line; under side paler than above, lateral carinæ distinct. Length 6.5-8.5 mm.

Hab.—Mexico. Prof. F. Sumichrast.

Mutilla yucatana Blake.

Female.—Head round, wider than the thorax, fuscous, finely reticulate, thinly clothed with erect black hairs; antennæ: scape and first joint of flagellum rufous; eyes ovate, granulate; thorax elongate ovate, ferruginous, finely reticulated, thinly clothed with erect hairs, metathorax gradually rounded behind; legs pale rufous, clothed with pale glittering hairs; abdomen ovate, dark ferruginous on the disc, sides fuscous, apical margin of second segment clothed with pale pubescence, the remaining segments with a central row of spots to the apex. Length 3 mm.

Hab.—Mexico. Prof. F. Sumichrast.

Mutilla peculiaris Cresson.

Female.—Long, linear, slender, brown ferruginous; head slightly broader than thorax, transversely subquadrate; cheeks and occiput clothed with long, pale, vertex with black and mouth with long fuscous pubescence; flagellum, except base, blackish; thorax divided into two nearly equal parts; the anterior portion short, quadrate, covered with a dense, appressed, pale golden pubescence; posterior portion of metathorax rather longer than the anterior, rapidly sloping behind, sparsely pubescent and finely reticulated, substriate at base above; legs with long, sparse, pale hairs, anterior tibiæ and extreme tips of the two posterior pairs black, tibial spurs white; abdomen elongate ovate, clothed with appressed fuscous pubescence, the apical margin of first and second segments narrowly and a spot on each side at apex of the first, silvery white; apex of abdomen long, sparse, erect, fuscous hairs; apex of first segment campanulate, petiole short and slender. Length 9 mm. (Cresson.)

Hab.—California.

Mutilla thoracica n. sp.

Female.—Head subquadrate, posterior angles rounded, coarsely and confluently punctured, castaneous, somewhat paler on the vertex, sparsely clothed with very short, black hairs; antennæ: scape and two basal joints of the flagellum honey yellow, the rest fuscous; mandibles black at tip; eyes large, ovate; thorax elongate quadrate, slightly narrowed at middle, prothorax ferruginous, densely punctured, and separated from the mesothorax by a deep sulcus, metathorax abruptly truncate, dark ferruginous and coarsely rugose; sides of mesothorax deeply excavate; legs testaceous, thinly clothed with a glittering silvery pile; abdomen ovate, basal segment very large, subglobose, sessile with the second segment, closely punctured, ferruginous, sparsely clothed with short, pale, yellowish pubescence, second segment with a broad castaneous band, not extending to the basal and apical margins, remaining segments castaneous, the apical margins fringed with pale golden pubescence; first, second and third ventral segments ferruginous, shining, finely and remotely punctured, apical margins fringed as above. Length 5–7 mm.

Hab.—New York.

Allied to *M. peculiaris* Cresson, but may easily be distinguished from that species by the thorax being destitute of the dense, appressed, golden pubescence, and the silvery white apical margin of the basal segment.

Mutilla rutilans Blake.

Female.—Entire insect bright castaneous; head quadrate, wider than thorax, posterior angles rounded, polished, covered with exceedingly minute punctures; eyes small, ovate and finely reticulate; antennæ somewhat pruinose; prothorax smooth, prominent, meso- and metathorax minutely punctured, the latter obliquely truncate, and having on each side a small tubercle; legs slender, tibiæ armed with a row of minute spines; abdomen polished, ovate, short; apical margin of basal segment black, second segment with two subquadrate white spots on the disc, fifth honey yellow, apex black. Length 7 mm.

Hab.—California.

This species differs from all others known to me by the entire absence of pubescence.

Mutilla sapiens Smith.

Male.—Black; the head and thorax coarsely punctured; the abdomen shining and more finely punctured; the head covered with white pubescence; the metathorax, the basal segment of the abdomen, and the apical margin of the second segment with a fascia of silvery white pubescence, the basal segment forming a short petiole; wings hyaline, faintly clouded at their apical margins, the nervures black; the tegulæ large, testaceous at their tips; anterior wings with three submarginal cells; the eyes emarginate. Length 7 mm. (Smith.)

Hab.—Mexico, Orizaba.

Mutilla ordinaria Smith.

Male.—Head, thorax, legs and basal segment of the abdomen black, the other segments ferruginous; wings fuscous and more or less hyaline at their base; the

head and thorax strongly punctured; the eyes emarginate; the face and the metathorax with thin white pubescence, the latter with large shallow punctures, a little silvery pile at the basal margin of the metathorax and also behind the wings, the latter with three submarginal cells; abdomen with fine, scattered punctures, and the segments fringed with ferruginous pubescence. Length 9–15 mm. (Smith.)

Hab.—Mexico, Orizaba.

Mutilla terminata Smith.

Male.—Head, thorax, legs and the base and apex of the abdomen black, the latter otherwise clothed with bright scarlet pubescence; the eyes ovate; the head, thorax anteriorly, and the scutellum with pale fulvous pubescence; wings with two submarginal cells, dark fuscous at their apex, pale towards their base; the abdomen more or less ferruginous beneath. Length 9 mm. (Smith.)

Hab.—Mexico, Orizaba.

Mutilla nana Smith.

Male.—Black; punctured, with the disc of the thorax and abdomen shining; head the width of the thorax, thinly covered with white pubescence; the eyes ovate: the scape of the antennæ and the mandibles obscurely ferruginous; the metathorax with large shallow punctures; the anterior wings fuscous, darkest in the marginal cell, with three submarginal cells; legs fusco-ferruginous; abdomen finely punctured; the apical margins of the segments thinly fringed with white pubescence. Length 6.5 mm. (Smith.)

Hab.—Mexico, Orizaba.

DIVISION III.

Neuration as represented by figure 9, except that the third submarginal cell is obsolete; first abdominal segment as in figure 10.

Fig. 9.

Fig. 10.

Mutilla copano Blake.

Male.—Head and thorax black, coarsely reticulate; head subquadrate, not quite as wide as the thorax, thinly clothed with short silvery hairs; antennæ black, scape punctured, mandibles ferruginous before the tips; eyes ovate, emarginate; thorax robust, narrowed behind, anterior angles of prothorax produced into acute teeth, posterior margin carinate, sides of mesothorax dilated, clothed with silvery pubescence, metathorax roundly truncate; wings pale fuliginous, hyaline at base; marginal cell sublanceolate, obliquely truncate at tip, first and second submarginal cells about equal, the second subtriangular, receiving the recurrent nervure beyond the middle, third obsolete; second discoidal cell large; tegulæ large, ovate, closely punctured, posteriorly ferruginous; legs black, thinly clothed

with white hairs, calcaria white; abdomen ovate, ferruginous, basal segment small, punctured, with a ventral carina terminating in an acute tooth anteriorly; second segment finely and closely punctured, apical margin clothed with silvery pubescence; the remaining segments fringed with a thin golden pubescence, ventral surface same as above, lateral carinæ distinct. Length 8.5 mm.; expanse of wings 11 mm.

Hab.—Texas. Belfrage.

Mutilla puteola Blake.

Female.—Ferruginous; head round, wider than the thorax, closely and evenly punctured; eyes round, large; cheeks clothed with white sericeous pubescence; antennæ fuscous; thorax elongate ovate, narrowed to apex, closely and regularly punctured, sides slightly sericeous; legs fuscous, thinly clothed with scattered white hairs; abdomen ovate, basal segment clothed with sericeous white pubescence, second closely and regularly punctured, its apical margin fringed at sides with silvery pubescence, fuscous at middle, third segment fuscous, apex paler. Length 5 mm.

Hab.—Texas. Three specimens.

Allied to *pygmæa* Blake, from which it differs by the narrow thorax, and in being destitute of the long hairs of the abdomen.

Mutilla parvula n. sp.

Female.—Ferruginous; head rounded, closely punctured; antennæ, scape and first joint of flagellum bright ferruginous, remainder fuscous; eyes ovate, tips of mandibles black; thorax ovate, narrowed posteriorly, closely punctured, metathorax abruptly truncate, thinly clothed with erect, glittering white hairs; legs fusco-ferruginous, thinly clothed with white pubescence; abdomen ovate, basal segment apically broad and sessile with the second segment, which is finely punctured, its apical margin and remaining segments, which are fuscous, thinly fringed with pale pubescence; ventral surface paler than above. Length 4.5 mm.

Hab.—Alabama.

This species corresponds so nearly with *M. puteola* in appearance, that it can only be separated by the form of the basal segment of the abdomen being sessile with the second, whereas in the latter it is cylindrical.

Genus 3, **SPHÆROPHTHALMA** Blake.

Male.—Head transversely rounded, or subquadrate, with the posterior angles round, rarely as wide as the thorax, which is generally ovate; eyes round, prominent and polished; the wings vary from dark fuliginous to fusco-hyaline, the latter more or less clouded; abdomen ovate, subpetiolate.

Female.—The form of the head differs widely; in some species it is rounded, or subquadrate; sometimes enormously developed, being twice the width of the thorax, and armed with strong spines beneath

the cheeks; eyes as in the male; thorax ovate, robust; the intermediate and posterior tibiæ are exteriorly armed with spines; abdomen ovate, having the basal segment small, campanulate and subsessile with the second segment.

The species of this genus are more densely pubescent than any in the Mutillidæ, often being richly adorned with golden or silvery pubescence and beautiful coloring and markings.

The species are quite numerous, and may be divided into two divisions and subdivisions, viz.:

DIVISION I.

First abdominal segment small, more or less nodose and constricted at apex, as in figures 11 and 12.

Fig. 11.

Fig. 12.

This may be again divided into two subdivisions:

SUBDIVISION I.

Head broad and quadrate behind the eyes, mandibles broad; neuration of anterior wing as represented by figure 13.

Fig. 13.

Sphærophthalma sæva Blake.

Male.—Black; head rounded, as wide as the thorax, closely punctured, space above and between the eyes rufo-ferruginous, with short erect hairs; antennæ black, the scape finely punctured; eyes round, prominent; thorax subquadrate, narrowed posteriorly, mesothorax elevated, metathorax abruptly rounded, coarsely reticulated; wings ample, fuliginous, marginal cell elongate ovate, slightly rounded at tip; two distinct submarginal cells, first moderately long and narrow, second about half as large as the marginal, receiving the first recurrent nervure a little before the middle; legs black, clothed with scattered black hairs, posterior tibiæ armed with a single spur; abdomen ovate, basal segment elongate, closely punctured, thinly clothed with black hairs; second segment pale ferruginous, with scattered hairs of the same color, shining, finely

punctured, lateral carinæ edged internally with black; the remaining segments clothed with dense, coarse, black pubescence. Length 11 mm.; expanse of wings 21 mm.

Hab.—Texas.

In some specimens the disc of the petiole is dark rufous.

Sphærophthalma pennsylvanica St. Farg.

Male.—Head and thorax reddish, clothed with black hairs; antennæ black; abdomen black, clothed with black hairs; first segment globose, ferruginous, its apical margin black; the second segment ferruginous, its apical margin black, nearly naked; legs black, clothed with black hairs; wings blackish violet, first submarginal cell with a transverse, transparent line, descending in an angle from the costa, after which it traverses the second submarginal, and joining a rather large transparent spot, common to the third submarginal and third discoidal cells, this last cell strongly narrowed towards the marginal. Length 18 mm.; expanse of wings 29 mm. (St. Farg.)

Hab.—Pennsylvania.

Sphærophthalma auripilis Blake.

Male.—Dark ferruginous, head quadrate, posterior angles rounded, closely and finely punctured, thinly clothed with scattered black hairs; scape of antennæ dark rufous, flagellum rufo-piceous; mandibles ferruginous, tipped with black; eyes prominent, round, polished; thorax elongate, narrowed behind, closely reticulated, very thinly clothed with dark hairs, posterior margin of prothorax carinate; mesothorax elevated, having four shallow, longitudinal grooves on the disc; metathorax gradually rounded, having a distinct suture in front; wings moderate, fuliginous, marginal cell lanceolate, first submarginal small, narrow, second large, subquadrate, receiving the first recurrent nervure before the middle, third obsolete, not extending as far as the marginal, a hyaline streak passing from the costa through the first and second submarginal cells, terminating in a patch of the same, below the third; legs black, clothed with pale glittering hairs; abdomen elongate ovate, basal segment dark ferruginous, with the apical margin black, closely reticulated, clothed with scattered pale hairs; second segment dusky fulvous, finely punctured, clothed with erect fulvous hairs; apical margin blackish; the remaining segments blackish, very finely reticulated, clothed with golden fulvous pubescence; lateral carinæ distinct. Length 14 mm.; expanse of wings 25.5 mm.

Hab.—Texas.

Sphærophthalma Edwardsii Cresson.

Male.—Elongate, slender, uniformly rufo-fulvous, densely and rather coarsely punctured, more feebly on the abdomen, clothed with short, erect, tolerably dense, golden fulvous pubescence; tips of mandibles and third and following joints of antennæ black; metathorax coarsely reticulated; wings blackish fuscous, with a hyaline spot beneath third submarginal cell; abdomen shining. Length 13 mm. (Cresson.)

Hab.—Oregon.

In one specimen the head, sides of thorax and first and second abdominal segments are nigro-castaneous.

This handsome species is allied to *auripilis* Blake, from which it differs by the less coarse punctuation, and by the more dense, uniform golden pubescence.

SUBDIVISION II.

Head subtransverse or subquadrate, not remarkably enlarged behind the eyes, neuration generally as represented by figure 14.

Fig. 14.

Sphærophthalma orcus Cresson.

Male.—Elongate; colored similar to the female, but much less coarsely punctured, and the antennæ much longer; the metathorax is large and rounded behind, covered with dense, rather coarse punctures, and clothed rather sparsely with long, black pubescence; wings ample, blackish, paler at tips; marginal cell short, not exceeding the tip of the third submarginal cell, the apex broadly truncate; the three submarginal cells distinctly defined, the first longer and the second as long as the marginal and receiving the first recurrent nervure before the middle; the third submarginal cell subtriangular, much narrowed beneath, so that the side nervures become almost confluent with the second recurrent nervure; legs black, punctured, clothed with black pubescence; abdomen ovate, gradually narrowed to tip, closely and rather finely punctured; apical margin of the large basal segment and all the remaining segments, as well as the lateral apical fringe of the ventral segments, densely clothed with long rufo-ferruginous pubescence, the remainder with black pubescence, sparse on the venter, which is shining; the node rather larger than in the female, coarsely punctured, with a large, flattened, subacute tooth beneath; second ventral segment somewhat concave on the middle, on which there is a deep ovate puncture. Length 35 mm.; expanse of wings 36 mm.

Female.—Deep black, with coarse black pubescence and large, deep punctures; head not wider than the thorax; eyes small, round, entire, very convex and polished; antennæ piceous black at base, the flagellum brownish and sericeous; thorax slightly narrowed behind and abruptly truncate; the excavations on the sides, for the reception of the legs, are smooth and shining, the posterior truncation less coarsely punctured and somewhat shining; legs black, with long, black pubescence; the tibiæ with short, black spines; abdomen large, ovate, coarsely punctured, black; most of the large basal segment and all the remaining segments above clothed with a long, dense, rufo-ferruginous pubescence; the node and the base and sides of the large basal segment, as well as the venter, clothed with black pubescence; the large ventral segment is sparsely pubescent and shining; in one specimen the lateral apical fringe of the ventral segments is reddish; the node or small basal segment is rather small, circular at the tip, narrowed towards the base and depressed above, with a short, stout tubercle on each side at extreme base. Length 19–20 mm. (Cresson.)

Hab.—Texas.

Easily recognized by the large size, the jet-black color, with most of the abdomen above rufo-ferruginous.

Sphærophthalma gorgon Blake.

Female.—Black; head wider than the thorax, subquadrate, posterior angles rounded, thinly clothed with black pubescence, closely punctured, cheeks prominent; eyes round, polished, scape of antennæ punctured; clothed with coarse, black pubescence, mandibles with a tooth before the tip; thorax short, ovate, closely covered with confluent punctures, clothed with black pubescence, metathorax abruptly truncate; legs black, clothed with black hairs, finely punctured, the intermediate and posterior tibiæ armed with spines; abdomen ovate, basal segment closely punctured, dorsal surface, except anterior margin of second segment, clothed with dense, coarse, dark ferruginous pubescence; under surface coarsely punctured, ventral segments fringed with black pubescence. Length 17 mm.

Hab.—Texas. Belfrage.

This species resembles *S. orcus* Cresson, but may be readily distinguished by the large subquadrate head, the shorter thorax, and mandibles being toothed before the tip.

Sphærophthalma tisiphone Blake.

Female.—Nigro-castaneous; head rounded, a little wider than thorax, coarsely punctured, face very broad, the punctures becoming finer about the insertion of antennæ; eyes small, round; antennæ slightly pruinose, scape finely punctured; thorax short, narrowed posteriorly, coarsely, confluently punctured; prothorax fringed with short, erect hairs; metathorax abruptly truncate, deeply reticulate, bearing a few erect hairs, flanks moderately excavate and smooth; legs finely punctured, the intermediate and posterior tibiæ armed externally with spines, mixed with fuscous hairs; abdomen elongate ovate; narrowed to apex, second segment coarsely punctured, its apical margin and remaining segments fringed with golden pubescence; under side as above, except that the marginal fringes are castaneous Length 17 mm.

Hab.—Texas.

Sphærophthalma parmosa n. sp.

Female.—Black; head quadrate, posterior angles rounded, slightly wider than the thorax, clothed above with obscure rusty golden pubescence, cheeks beneath the eyes coarsely punctured; mandibles and scape of antennæ black, flagellum nigro-castaneous; thorax short, subtriangular, suddenly narrowed posteriorly; pro- and mesothorox above, clothed with rusty golden pubescence; metathorax obliquely truncate, coarsely reticulate, sides and beneath closely punctured; legs black, thinly clothed with black hairs; femora finely punctured, the intermediate and posterior tibiæ armed with strong spines; abdomen elongate ovate, basal segment small, coarsely punctured, and bearing a few erect black hairs; second segment coarsely punctured, its apical two-thirds and remaining segments clothed with rusty golden pubescence; ventral surface finely punctured, apical margins fringed as above. Length 17 mm.

Hab.—California.

Sphærophthalma venifica n. sp.

Female.—Castaneous; head rounded, as wide as the thorax, densely punctured, sparsely clothed with pale golden pubescence, mandibles black at tips; antennæ

fuscous; eyes round, polished; thorax ovate, somewhat constricted behind the middle, coarsely reticulated and thinly clothed with pale golden pubescence; metathorax roundly truncate; legs castaneous, finely punctured, thinly clothed with fuscous hairs, intermediate and posterior tibiæ armed with strong spines; abdomen elongate ovate, basal segment campanulate, clothed with erect black hairs, second segment coarsely and confluently punctured, thinly clothed with pale golden pubescence, that on the apical segments longer and denser, ventral surface coarsely and remotely punctured, shining. Length 12 mm.

Hab.—California.

Allied to *S. parmosa*, but differs in having the pubescence pale golden, and is uniformly castaneous, whereas *parmosa* is entirely black.

Sphærophthalma zelaya Blake.

Male.—Black; head rounded, as wide as the thorax, finely punctured, thinly clothed with erect black pubescence; eyes round, polished; antennæ black; thorax ovate, closely punctured, clothed with erect black hairs, metathorax roundly truncate, closely reticulate; tegulæ small, polished; wings fuscous, marginal cell obliquely subquadrate, truncate at tip, first submarginal large, second subtriangular, wide beneath, its basal and apical nervures sinuate, receiving the first recurrent near the base, third subpentagonal, narrowed beneath; legs black, thinly clothed with black hairs; abdomen elongate ovate, petiolate, petiole pyriform, closely punctured, having a small ventral tubercle, second segment shining, closely punctured, thinly clothed with erect black hairs, the apical margin and following segments clothed with long coarse orange-yellow pubescence; under side shining, black. Length 8.5 mm.; expanse of wings 15 mm.

Hab.—Texas.

Sphærophthalma comanche Blake.

Male.—Black; head not as wide as the thorax, rounded, clothed with long, coarse, dark ferruginous pubescence, scape of antennæ black, flagellum fuliginous, mandibles black; eyes round, prominent; thorax elongate quadrate, pro- and mesothorax thinly clothed with black hairs; wings ample, fuliginous, marginal cell short, abruptly truncate at tip, three distinct submarginal cells, the first a little longer than the marginal, the second subtriangular, having a subhyaline streak through its entire length, and receiving the first recurrent nervure one-third before the middle; the third extending beyond the marginal; tegulæ large; legs black, clothed with black hairs, calcaria black, long, serrated interiorly; abdomen ovate, basal segment closely punctured, clothed with coarse black hairs, second segment finely punctured, shining, thinly clothed with black hairs; apical margin and following segments thickly clothed with long, dark ferruginous pubescence; margins of the second and third ventral segments fringed as above, lateral carinæ distinct. Length 19 mm.; expanse of wings 38 mm.

Female.—Black; head subquadrate, posterior angles rounded, not as wide as the thorax, reticulated, clothed with brown-black pubescence; scape of antennæ black, rugulose, flagellum dark fuscous; eyes round, prominent; cheeks below the eyes closely punctured; thorax short, narrowed behind, coarsely reticulated, clothed the same as the head, the mesothorax has on each side a strong carina.

which terminates at the top in a small obtuse tooth; metathorax abruptly truncate, the sides closely reticulated, and bearing a shining black tubercle on each side; legs robust, black, clothed with long black hairs; abdomen ovate, basal segment coarsely reticulated, clothed with long scattered black hairs; second segment closely punctured, basal and apical margins clothed with black, disc with pale brown pubescence; third segment clothed with brownish black, the remaining segments with ferruginous; under side of second segment closely punctured, lateral carinæ distinct; margins of ventral segments fringed with dark brown pubescence. Length 21 mm.

Hab.—Texas.

Sphærophthalma texana Blake.

Female.—Head and thorax coarsely, confluently punctured, nigro-fuscous, thinly clothed with short erect hairs, the former subquadrate, posterior angles rounded, as wide as the thorax; cheeks thinly clothed with glittering hairs; antennæ fuscous, scape punctured, flagellum slightly pruinose; eyes round, prominent, polished; thorax ovate, narrowed posteriorly, metathorax roundly truncate; legs black, clothed with scattered white hairs; femora and tibiæ finely punctured, intermediate and posterior tibiæ armed with spines; abdomen ovate, narrowed to apex, basal segment fuscous, closely punctured, second segment clothed with obscure fulvous pubescence, its apical margin ciliated with yellow, third and fourth segments nigro-fuscous, clothed with black hairs, apex silvery. Length 10 mm.

Hab.—Texas. Two specimens.

Allied to *comanche* Blake.

Sphærophthalma clotho Blake.

Female.—Black; head subquadrate, posterior angles rounded, not as wide as the thorax, densely rugose, clothed with black pubescence, cheeks below the eyes closely and irregularly punctured; eyes round, prominent; scape of antennæ punctured, black, flagellum piceous; thorax robust, ovate, narrowed posteriorly, densely clothed above with black pubescence, sides closely punctured, mesothorax armed posteriorly with a small tubercle on each side, metathorax abruptly truncate, closely punctured; legs black, clothed with black hairs, intermediate and posterior tibiæ armed with long spines; abdomen ovate, basal segment closely punctured, clothed with long erect black hairs, second segment having a broad band of reddish golden pubescence, emarginate anteriorly and posteriorly, divided by a narrow central longitudinal line of black, base and apical margin black, third and fourth black, apical segment clothed with reddish golden pubescence; under side black, closely punctured, sparsely clothed with black hairs, margins of all the segments fringed with long black pubescence. Length 21 mm.

Hab.—Texas. One specimen.

This fine species is allied to *comanche*. It differs from the latter in having the head less rounded, and the thorax somewhat longer, the clothing is also less coarse than in *comanche*. It also resembles *occidentalis* in the ornamentation of the abdomen, but the head and thorax are entirely black.

Sphærophthalma erato Blake.

Female.—Rufo-castaneous; head round, not as wide as thorax, clothed with dense yellowish white pubescence; eyes large, round, prominent, polished; antennæ fuscous, scape thinly clothed with whitish hairs, tips of mandibles black; thorax short, ovate, coarsely punctured, metathorax abruptly truncate, thinly clothed with white hairs; legs sparsely clothed with long glittering white hairs, femora punctured; abdomen elongate ovate, coarsely and deeply punctured, thinly clothed with erect glittering white hairs, apical margins of first and second segments densely fringed with white pubescence; under side same as above. Length 8–12 mm.

Hab.—Texas. Two specimens.

Sphærophthalma Suckenii Cresson.

Female.—Deep black, with large, coarse punctures; head not wider than the thorax, clothed above the antennæ with long, dense, erect, whitish pubescence, rest of the head with deep black pubescence; eyes small, round, entire and convex; antennæ black, the flagellum sericeous; thorax ovate, abrupt on the sides and behind, the upper surface densely clothed with very long, erect, somewhat radiating, whitish pubescence; the black upper surface of the thorax is concealed by a short, dense, appressed, whitish pubescence; sides of the thorax and beneath clothed with deep black pubescence, which is exceedingly long and fringe-like on the ridge between the two lateral excavations and immediately opposite the intermediate legs; legs deep black, with long black pubescence, very long on the femora; abdomen ovate, the dorsal surface, except the extreme base, clothed like the thorax, with a very long, somewhat radiating whitish pubescence, which extends beneath on the lateral apical margins of the segments; the node, or small basal segment, is rather small, deeply rugose and clothed with long black pubescence. Length 12–14 mm. (Cresson.)

Male.—Black; head and thorax densely clothed with long whitish pubescence, mandibles and antennæ black; eyes large, round and prominent; sides of thorax densely and coarsely punctured, and clothed with black pubescence; legs black, clothed with long black pubescence; wings fuliginous, three submarginal cells, marginal cell short, ovate, truncate at tip; first submarginal large, second subtriangular, narrowed at the marginal cell, its transverse nervures sinuate, receiving the first recurrent nervure near the base, third submarginal subpentagonal, much narrowed beneath, the second recurrent nervure reaching the cubital a little outside the cell; abdomen ovate, basal segment campanulate, densely clothed with long, coarse, black pubescence; second segment densely and finely punctured, clothed with long black pubescence; apical segments with long, coarse, whitish pubescence; ventral surface coarsely punctured, clothed with black pubescence. Length 12 mm.; expanse of wings 22 mm. (Blake.)

Hab.—California.

This remarkable species may be at once recognized by the deep black color and the exceedingly long, erect, whitish pubescence which clothes the upper surface of the head, thorax and abdomen, giving it a brush-like appearance. The smallest specimen has the whitish pubescence much shorter than the larger ones, as if the very long pubescence had been cropped off.

Sphærophthalma thetis n. sp.

Female.—Ferruginous, clothed entirely above with long, coarse, whitish pubescence; head transverse, rounded behind the eyes, slightly wider than the thorax; antennæ fuscous, scape clothed with whitish pubescence; eyes prominent, round; thorax short, metathorax abruptly truncate, coarsely punctured, deeply excavate at sides; legs pale ferruginous, thinly clothed with whitish hairs, spines and calcaria castaneous; basal segment of abdomen campanulate, second closely punctured, beneath castaneous; apical margins of all the ventral segments fringed with white pubescence. Length 7 mm.

Hab.—Arizona.

This species is allied to *Sackenii* Cresson, but may readily be distinguished by the tegument being ferruginous, whereas the former is black, and also by its smaller size.

Sphærophthalma clio Blake.

Female.—Black; head round, not as wide as thorax, clothed on vertex with coarse ochraceous pubescence; eyes round, prominent; antennæ black; thorax robust, ovate, narrowed posteriorly, clothed on disc with coarse ochraceous pubescence, metathorax abruptly truncate, reticulate, flanks impunctate; legs black, having a few scattered, long black hairs, intermediate and posterior tibiæ armed with spines, calcaria long; abdomen ovate, basal half of second segment black, with coarse black pubescence, apical half and sides of third, fourth and fifth segments clothed with coarse ochraceous pubescence, third and fourth, at middle, and apex black. Length 9.5 mm. (H. Edwards.)

Hab.—Vancouver's Island.

Sphærophthalma magna Cresson.

Female.—Deep black, coarsely punctured; head not wider than the thorax, densely clothed with a long, ochraceous-yellow pubescence, rather thin on the cheeks; eyes small, round, entire, convex; antennæ black, the scape with ochraceous-yellow pubescence, the flagellum sericeous; thorax ovate, abrupt on the sides and behind, the upper surface, except of the metathorax, clothed with long, dense, coarse, ochraceous-yellow pubescence, which also fringes the ridge, between the two lateral excavations; metathorax above clothed with long, dense, black pubescence; legs black; the coxæ beneath, the femora and base of tibiæ and the tarsi with black pubescence; abdomen large, ovate, clothed with a long, dense, coarse, ochraceous-yellow pubescence; the node and the extreme base of the large basal segment clothed with black pubescence; on the venter the pubescence is not so dense. Length 23.5 mm. (Cresson.)

Hab.—Cape St. Lucas, Lower California.

Sphærophthalma holotricha Sauss.

Female.—Head transverse, rounded, as wide as thorax, densely clothed with ochraceous pubescence; antennæ fuscous; eyes round, prominent; thorax elongate ovate, narrowed posteriorly; pro- and mesothorax densely clothed with ochraceous pubescence; metathorax rufous, closely punctured; legs fuscous; abdomen ovate, basal segment campanulate, rufous, coarsely punctured; second segment densely clothed with ochraceous pubescence, apical margins of segments fuscous, fringed with black hair. Length 14 mm.

Hab.—Mexico.

Sphærophthalma aureola Cresson.

Female.—Black, coarsely punctured; head large, quadrate, wider than the thorax, clothed above the antennæ with a dense, deep golden yellow pubescence; on the rest of the head the pubescence is black; eyes small, round, entire, convex and polished; mandibles black, also polished; antennæ piceous brown, the scape with black pubescence, the flagellum tinged with rufous, sericeous; thorax very short and broad, somewhat strangulated behind the middle, abrupt on the sides and behind, the upper surface densely clothed with a deep golden yellow pubescence; metathorax abruptly truncate behind, and, as well as the sides of the thorax, sparsely clothed with black pubescence; legs black, with long, scattered, black pubescence; abdomen ovate, densely clothed, except base, with long, appressed, deep golden yellow pubescence; the node, the base of the large basal segment above, and the whole of this segment beneath, except its apical margin, clothed with black pubescence; above, the black on the large basal segment slightly indents the yellow on the basal middle; the node is small, circular at tip and flattened above at base; all the ventral segments have an apical fringe of dense golden yellow pubescence. Length 14 mm. (Cresson.)

Hab.—California.

Allied to *californica* Radoszkowski, but differs by the large quadrate head and the shorter thorax.

Sphærophthalma mollissima n. sp.

Male.—Robust; black, head large, rounded, densely clothed with coarse, erect, fulvous pubescence; antennæ black; eyes large, round, prominent; cheeks closely punctured, clothed with black pubescence; thorax short, ovate, pro- and mesothorax clothed on the disc with dense fulvous pubescence, metathorax roundly truncate, coarsely reticulate; wings fuscous, paler about the middle, marginal cell short, truncate at tip, first submarginal cell nearly as large as the marginal cell, pointed towards base, second submarginal subovate, its transverso-cubital nervures arcuate, receiving the first recurrent nervure before the middle, third submarginal subpentagonal, its outer nervure sinuate and confluent with the second recurrent; legs black, thinly clothed with black hairs; abdomen ovate, basal segment campanulate, closely punctured, shining, its apical half and remaining segments clothed with dense fulvous pubescence; ventral surface of second segment finely and densely punctured, apical margins fringed with glittering fulvous pubescence. Length 15 mm.; expanse of wings 25 mm.

Female.—Similar to the male, with the exception of the metathorax, which is very abruptly truncate, the punctures of the second abdominal segment coarser, and the pubescence longer. Length 14 mm.

Hab.—Colorado.

This species is closely allied to *S. aureola* Cresson, but may be separated by the more robust form and the pubescence being fulvous.

Sphærophthalma canina Smith.

Female.—Rufo-testaceous, palest beneath; the vertex and front densely clothed with long, pale ochraceous pubescence; head round, eyes large and prominent; thorax: the anterior half of the mesothorax clothed with black pubescence, the

posterior half with pale ochraceous; the apical margins of the second, third and fourth segments have a broad fascia of pale ochraceous pubescence; that on the second produced in the middle into an angular shape; the basal half of the second segment, and the third and sixth segments entirely clothed with black pubescence; the entire insect sprinkled over with long loose pale hairs. Length 10 mm. (Smith.)

Hab.—Mexico.

Sphærophthalma leda Blake.

Female.—Black; head subquadrate, posterior angles rounded, wider than the thorax, densely punctured, thinly clothed with scattered golden hairs; antennæ fuscous; eyes small, round; mandibles ferruginous at base, black at tips; thorax short, ovate, thinly clothed with obscure golden pubescence, sides coarsely reticulate, metathorax abruptly truncate; legs black, clothed with black hairs, intermediate and posterior tibiæ armed with long spines; abdomen ovate, clothed above with coarse golden pubescence; under side covered with coarse confluent punctures, margins of the segments fringed with black hairs. Length 14 mm.

Hab.—Texas. One specimen.

Closely resembles *aureola* Cresson.

Sphærophthalma combusta Smith.

Female.—Entirely of a reddish brown; the antennæ, mandibles and legs ferruginous; the head and the thorax above clothed with golden pubescence; the sides of the thorax unarmed, narrowed posteriorly; the basal and four apical segments of the abdomen adorned with golden pubescence; the second segment having two large ovate maculæ, placed transversely a little beyond the middle. Length 10 mm. (Smith.)

Hab.—Mexico.

Sphærophthalma tecta Cresson.

Female.—Form elongate, subrobust, fuscous; head narrower than thorax, not broader behind the eyes; thorax short, subquadrate, broadest across the middle; abdomen oblong ovate; entire body and legs clothed with very long, dense, suberect, pale ochraceous pubescence, more sparse on body beneath and legs. Length 13 mm. (Cresson.)

Hab.—California.

Allied to *magna* Cresson, but at once distinguished by the pubescence of the body beneath, and legs being pale ochraceous instead of black.

Sphærophthalma rubriceps Cresson.

Female.—Head dull rufous, densely punctured and clothed with pale ochraceous pubescence; mandibles, palpi and antennæ piceous, or rufo-piceous, the latter proportioned as in *nigriceps;* thorax deeply and coarsely punctured, especially on the sides, convex above, deep black, clothed with short, dense, black pubescence; on each side before the middle a small, flattened tubercle, and behind the middle a large, obtuse, rufous tubercle tipped with black; pleura beneath and the metathorax behind densely clothed with a short, fine, appressed, pale, ochra-

ceous, sericeous pubescence; legs piceous, densely clothed with pale ochraceous pubescence; tibiæ with a row of long, acute, black spines; abdomen ovate, convex above; basal segment small, quadrate, punctured, clothed with dense, pale ochraceous, silky pubescence; second segment large, dull rufous, tinged with brown, densely, deeply and confluently punctured, clothed with ochraceous pubescence, especially on the extreme sides and on the sides of the apical margin where it is very dense and appressed; on the apical middle of this segment a large black spot, clothed with black pubescence, and on each extreme side another blackish spot, bordered behind with the ochraceous margin; remaining segments piceous, or rufo-piceous, densely clothed, especially at tip, with a short, appressed, pale ochraceous pubescence. Length 12.5 mm. (Cresson.)

Hab.—Cuba.

Sphærophthalma erudita Cresson.

Female.—Form elongate, subrobust, black; head narrower than thorax, not broader behind the eyes; thorax subquadrate; narrowed behind, and slightly so in front; abdomen ovate; head, thorax, abdomen above and sides of apical half of venter clothed with a long, dense, erect, ochraceous pubescence; body beneath and legs sparsely clothed with black hairs, long on the femora beneath. Length 13 mm. (Cresson.)

Hab.—California.

Allied to *Sackenii* Cresson.

Sphærophthalma Sicheliana Sauss.

Female.—Head rounded, not quite as wide as thorax, densely clothed with ochraceous pubescence; scape of antennæ castaneous, clothed with glittering hairs, flagellum fuscous; mandibles black; eyes round, prominent, polished; thorax robust, narrowed posteriorly; prothorax densely clothed with ochraceous pubescence, mesothorax finely rugose, black, metathorax abruptly truncate, clothed with ochraceous pubescence; sides dark rufous, coarsely punctured; legs bright ferruginous, clothed with long, pale glittering hairs, femora punctured, intermediate and posterior tibiæ armed exteriorly with black spines, knees and calcaria blackish; abdomen broadly ovate, basal segment sessile with the second, its apical margin fringed with ochraceous pubescence; second segment dark rufous, coarsely punctured, having on the disc at middle two small patches of black pubescence, margined laterally with ochraceous, apical margin blackish; third and fourth segments clothed with pale yellow, glittering pubescence; apex black; under side bright ferruginous, coarsely punctured. Length 14 mm.

Hab.—Arizona, Mexico.

Sphærophthalma pacifica Cresson.

Female.—Robust, black; head large, quadrate, slightly broader than thorax, extended and widened behind the eyes, occiput truncate; thorax short, subquadrate, broad anteriorly, slightly narrowed posteriorly; abdomen short, ovate; head, thorax, abdomen above and apical half of venter, clothed with dense, coarse, moderately long, bright sanguineous hairs; base of abdomen, body beneath and legs with less dense, coarse, black hairs. Length 11–15 mm. (Cresson.)

Hab.—California.

Distinguished from *californica* Radoez., by the shorter, more robust form, and large quadrate head.

Sphærophthalma vestita Klug.

Female.—Head black, clothed with black pubescence, that on the front and vertex reddish golden; antennæ black; thorax black, pubescent beneath and on the sides, tufted on the back, with a red border; abdomen black, clothed above with black hairs on the first and second segments, below the same, the apical segments clothed with tufted reddish golden pubescence; legs black, clothed with black hairs, spines black.

Male.—Head clothed with black hairs, with the exception of a little tuft on the vertex, which is reddish golden; sixth segment of the abdomen same as in the female; wings black, with a violet reflection, nervures, stigma and tegulæ blackish. (Klug.)

Hab.—Mexico.

Sphærophthalma ursula Cresson.

Male.—Black; thorax and scutellum above, and abdomen above, except first and base of second segments, clothed with a dense golden, fulvous pubescence; wings black; second segment of abdomen shining, the pubescence sparse on the disk, the apical half generally divided into two more or less distinct, rounded, bright fulvous spots, sometimes confluent. Length 13 mm. (Cresson.)

Hab.—Oregon, Texas.

Allied to *bioculata* Cresson.

Sphærophthalma auraria Blake.

Female.—Black; head rounded, densely clothed on vertex with golden pubescence, cheeks testaceous, coarsely punctured; antennæ fusco-testaceous, flagellum slightly pruinose; mouth clothed with long white hairs; eyes round, polished; thorax ovate, narrowed posteriorly, densely clothed with golden pubescence; legs blackish fuscous, tarsi, spines and calcaria testaceous; abdomen ovate, clothed with golden pubescence, more dense on apical segments; ventral surface black, thinly clothed with long white hairs, margins of apical segments densely fringed with pale golden pubescence. Length 12 mm.

Hab.—Nevada. (Morrison.)

Sphærophthalma arota Cresson.

Female.—Robust; brown-ferruginous; head round, narrower than thorax; thorax short, subquadrate, slightly narrowed posteriorly; abdomen short ovate, much broader than thorax; head, thorax at sides and beneath, and apex of abdomen and beneath, clothed with a moderately dense silvery white pubescence, interspersed with long erect hairs of same color; the appressed pubescence on the head is very dense; thorax above and second abdominal segment above with a dense, appressed golden fulvous pubescence, also interspersed with longer erect hairs of same color; legs blackish, with long pale pubescence. Length 7 mm. (Cresson.)

Hab.—San Diego, California.

Sphærophthalma marpesia Blake.

Female.—Black; head subquadrate, rounded posteriorly, clothed with yellow pubescence, cheeks coarsely punctured, mouth densely clothed with pale pubescence; antennæ fuscous, scape clothed with whitish pubescence, flagellum slightly

pruinose; eyes round, polished; thorax ovate densely covered with yellow pubescence; legs black, thinly clothed with long silvery hairs, spines of tibiæ and tarsi fuscous; abdomen ovate, apical margin of basal segment fringed with pale pubescence, basal half of second segment black, closely punctured, clothed with erect black hairs, apical margin and remaining segments clothed with yellow pubescence; ventral segments black, deeply punctured; entire insect beneath thinly clothed with long silvery hairs, more dense on apical margins. Length 10–12 mm.

Hab.—Kansas, Utah. (Snow.)

Sphærophthalma californica Radosz.

Female.—Black; the head above the eyes, the thorax above and the abdomen above, except the extreme base, densely clothed with ferruginous pubescence, sometimes varying to golden ochraceous; the head is subquadrate, but not broader than the thorax, the eyes are small, rounded, entire and convex, the antennæ are black, and somewhat sericeous; the thorax is short, broad ovate when viewed from above, the punctures are close and rather coarse, the metathorax abruptly truncate behind; the legs are entirely black, with black pubescence; the abdomen is ovate, closely and deeply punctured; the node, the base and sides of the large basal segment as well as the venter entirely, more or less clothed with black pubescence. Length 9–15 mm. (Cresson.)

Hab.—California.

Sphærophthalma phædra Blake.

Female.—Ferruginous; head subquadrate, posterior angles rounded, vertex clothed with deep golden pubescence; antennæ fuscous, flagellum pruinose, tips of mandibles blackish; eyes round, cheeks fuscous, closely punctured; thorax short, ovate, clothed on disc with deep golden pubescence, flanks fuscous, metathorax abruptly truncate; legs fuscous, thinly clothed with long whitish hairs; abdomen elongate ovate, densely clothed above with deep golden pubescence, interspersed with long erect hairs of same color, fringes of apical margins more dense; under side fusco-ferruginous, sparsely punctured. Length 7 mm.

Hab.—Nevada.

Allied to *auraria*, but may be distinguished by the tegument being ferruginous.

Sphærophthalma fulvohirta Cresson.

Male.—Head black, coarsely punctured, with long black pubescence, mixed with fulvous on the vertex; eyes small, rounded, entire and convex; antennæ about as long as the head and thorax, black, sericeous; thorax coarsely punctured, black, the upper surface clothed with a long, dense, bright fulvous pubescence; on the sides and beneath it is black; metathorax broad, abrupt behind, rounded on the sides, reticulated with coarse punctures and thinly clothed with fulvous pubescence; wings ample, blackish, much paler about the middle; the cells much as in *S. monticola*, except that the third submarginal cell (which is also very indistinctly defined) is more narrowed beneath, and the second submarginal receives the first recurrent nervure more towards the middle; legs entirely black, with black pubescence; abdomen ovate, black, shining, closely punctured and clothed with black pubescence; apical margin, sometimes the apical half of the

large basal segment and all the other segments above, clothed with a dense, bright fulvous pubescence; beneath, entirely black. Length 11–13 mm.; expanse of wings 19–23.5 mm. (Cresson.)

Hab.—Colorado.

The pubescence on the upper surface of the head, thorax and abdomen varies from ochraceous to ferruginous, but generally it is bright fulvous. This may be the male of *S. californica* Radoszkowsky.

Sphærophthalma aspasia Blake.

Female.—Fuscous; head round, scarcely as wide as thorax, closely punctured, clothed with whitish pubescence; antennæ fuscous, flagellum paler, scape finely punctured, clothed with glittering hairs; eyes round, polished; thorax quadrate, slightly narrowed behind, clothed with coarse golden pubescence; metathorax abruptly truncate; legs fuscous, clothed with pale glittering hairs; abdomen ovate, second segment clothed with long, silky, golden pubescence; apical margins of segments fringed with pale yellowish hairs. Length 7 mm.

Hab.—Nevada.

Allied to *auraria* Blake.

Sphærophthalma chiron Blake.

Male.—Black; head not as wide as the thorax, clothed with long black pubescence; antennæ black; eyes small, round, prominent; thorax short, ovate, clothed with long black pubescence; metathorax coarsely reticulate; wings moderate, fuliginous, three submarginal cells, the marginal cell truncate at tip, first submarginal large, second small, subtriangular, its basal and apical nervures sinuate, receiving the first recurrent nervure near the base; third submarginal larger, slightly narrowed beneath, receiving the second recurrent close to its apical nervure; legs black, clothed with black hairs; abdomen ovate, petiolate, basal segment coarsely punctured, second closely and finely punctured, clothed with long, erect, black pubescence, remaining segments densely clothed with long fulvo-ferruginous pubescence; under side shining, second segment closely punctured. Length 9 mm.; expanse of wings 13 mm.

Hab.—Texas. Two specimens.

This species is closely allied to *fulvohirta* Cresson, but may be readily distinguished by the clothing of the head and thorax being black, and having the third submarginal cell distinct. One variety has the thorax and apical segment of the abdomen clothed with fulvous pubescence.

Sphærophthalma zenobia Blake.

Female.—Fuscous; head round, not as wide as thorax, clothed with dense, deep golden pubescence; eyes round, prominent; antennæ fuscous; thorax quadrate, narrowed posteriorly, clothed with reddish golden pubescence, flanks smooth, metathorax abruptly truncate, clothed with long erect hairs; legs fuscous, thinly clothed with long pale hairs; abdomen ovate, basal segment with long, erect hairs, second and following segments clothed with dense reddish golden pubescence; ventral fringes whitish. Length 6 mm.

Hab.—California.

Allied to *auraria* Blake.

Sphærophthalma bellona Cresson.

Female.—Rufo-piceous; closely and deeply punctured; head not wider than the thorax, clothed above the antennæ with a long, dense, rufo-ferruginous pubescence, beneath the antennæ and on the cheeks the pubescence is black and scattered: eyes small, rounded, entire, convex and polished; mandibles black, smooth and polished; antennæ deep black, the flagellum subsericeous: thorax ovate, slightly narrowed behind, clothed above with a long, dense, rufo-ferruginous pubescence, longer on the summit of the metathorax, which is abruptly truncate behind; sides of the thorax sparsely clothed with long black pubescence; beneath, it is more or less mixed with pale yellowish; legs black, clothed with black pubescence, slightly mixed with pale yellowish, especially on the femora beneath: base of the coxæ rufo-piceous; abdomen ovate, closely punctured, the large basal segment above clothed with a dense rufo-ferruginous pubescence; the node, the extreme base of the large basal segment and the apical segments above more or less clothed with black pubescence, except the apical margins of all the segments above and beneath, where the pubescence is pale yellowish; sometimes the pubescence of the third segment above is tinged with reddish; the node beneath and the large ventral segment has a scattered, pale yellowish pubescence; the node above is blackish or piceous-black, circular and rugose at tip, and smooth, shining and depressed at base. Length 13-15 mm. (Cresson.)

Hab.—Colorado.

Allied to *S. californica* Radosz., but is distinguished by the color of the body being rufo-piceous instead of black, and by the abdomen having only the large basal segment reddish above.

Sphærophthalma verticalis Smith.

Female.—Black; the head broader than the thorax; the vertex red and clothed with ferruginous pubescence; thorax narrowed posteriorly, the sides slightly contracted a little beyond the middle, the lateral margins crenulated; the mesothorax has a broad red stipe on each side; the legs and the thorax beneath thinly covered with pale glittering pubescence; the intermediate and posterior tibiæ armed exteriorly with a row of sharp spines; abdomen: the second segment has two small ovate spots at its basal margin and beyond them two large ovate ones almost touching in the centre of the segment; the four apical segments fringed with long, pale, yellow, glittering pubescence. Length 12 mm. (Smith.)

Hab.—Mexico.

Sphærophthalma segina Cresson.

Female.—Very closely allied to *S. bellona*, from which it differs only by having the pubescence of the legs and of the abdomen, except on the large basal segment above, *entirely* deep black, and the segments not fringed with yellowish; the pubescence of the head, thorax and large basal segment of the abdomen above varies to yellowish ferruginous. Length 13 mm. (Cresson.)

Hab.—Colorado.

Sphærophthalma coccineohirta Blake.

Male.—Black; head round, not as wide as the thorax, coarsely reticulated, clothed with long, coarse, scarlet pubescence; antennæ black; eyes round; thorax short, narrowed behind, pro- and mesothorax clothed similar to the head,

metathorax abruptly rounded, coarsely punctured; wings dark fuscous, marginal cell small, abruptly truncate at tip; first submarginal larger than the marginal, second subtriangular, receiving the first recurrent nervure, near the first submarginal, third distinct and extending beyond the marginal; legs black, with black hairs; abdomen ovate, basal segment clothed with erect black hairs; abdomen ovate, basal segment clothed with erect black hairs, apical half of second and the following segments clothed with long, coarse, scarlet pubescence; under side black, shining. Length 11 mm.; expanse of wings 20 mm.

Female.—Same as the male, with the exception of the second segment of the abdomen being entirely covered with coarse scarlet pubescence. Length 8.5–13 mm.

Hab.—California. (Mr. Iülich.)

Closely allied to *fulvohirta* Cresson, but may be distinguished by the marginal cell being smaller and the clothing much coarser.

Sphærophthalma pulchra Smith.

Female.—Black; head small, narrower than the thorax and densely clothed with bright golden pubescence; thorax deeply notched at the sides and having a transverse curved fascia of golden pubescence a little beyond the middle; the thorax beneath and the legs have a pale ochraceous glittering pubescence; abdomen: the second segment has on each side at its base a large angular macula, and towards its apical margin on each side a transverse, oblong, subovate macula of reddish yellow; the three apical segments clothed with golden pubescence, the fifth having on each side a mixture of black and fuscous hairs. Length 19 mm. (Smith.)

Hab.—Mexico.

Sphærophthalma Sumichrasti Saus.

Male.—Head and thorax black, clothed with ochraceous pubescence, mesothorax black; wings hyaline, clouded at apex, marginal cell short, truncate at tip; abdomen above clothed with scarlet pubescence, apex black; eyes round. Length 13 mm.; expanse of wings 17 mm.

Female.—Head subquadrate, posterior angles rounded, clothed with dense ochraceous pubescence; eyes round, convex, polished; antennæ black; thorax short, subquadrate, somewhat wider than the head, narrowed posteriorly, disc clothed with black pubescence, margined laterally and posteriorly with ochraceous; legs black, clothed with yellowish hairs; abdomen ovate, second segment clothed with dense ochraceous pubescence, having on the disc a bilobate patch of black, somewhat resembling a horseshoe in form, extending to the anterior margin, third and fourth segments with black pubescence, the remaining ones ochraceous, apex black. Length 8.5–13 mm.

Hab.—Mexico.

Sphærophthalma militaris Smith.

Female.—Bright brick-red; the head, legs, basal segment of the abdomen, a trilobate spot at the base of the second segment, an angular one on its apical margin, and also the four apical segments, black; all the black parts of the insect, except the legs, are clothed with black pubescence, on the legs and the red portions it is griceous. Length 13 mm. (Smith.)

Hab.—Jamaica.

Sphærophthalma occidentalis Linn.

Male.—Black; head rounded, clothed with scarlet pubescence; eyes large, round and prominent; antennæ and mandibles black; thorax robust, ovate, clothed on the disc with scarlet pubescence; metathorax roundly truncate, coarsely and confluently punctured; legs black, clothed with black hairs; wings ample, fuliginous, three submarginal cells, marginal cell short, abruptly truncate at tip; first submarginal pointed at either end, second elongate subquadrate, its transverso-cubital nervures sinuate, receiving the first recurrent nervure near the base; third submarginal subpentagonal, much narrowed beneath, its apical nervure confluent with the second recurrent; tegulæ clothed anteriorly with fine scarlet pubescence; abdomen ovate, basal segment petiolate, finely punctured, clothed with erect black hairs; second segment black, shining, minutely punctured, clothed with short, black pubescence, its apical margin and third and sixth segments clothed with scarlet pubescence, fourth and fifth with black; ventral surface shining, finely and remotely punctured; pubescence coarser than that of the female. Length 16–22 mm.; expanse of wings 30–40 mm.

Female.—Head round, not as wide as the thorax, dark rufous, densely clothed with scarlet pubescence, cheeks coarsely punctured, scape of antennæ castaneous, finely punctured, flagellum fuscous; mandibles black at base and tips; eyes round, polished; thorax robust, ovate, narrowed posteriorly, coarsely punctured, densely clothed on the disc with dense, scarlet pubescence; pro- and mesothorax armed on each side with an ovate tubercle; metathorax abruptly truncate, its posterior surface finely punctulate, lateral declivities of the thorax black, finely punctured; legs black, clothed with black hairs, femora finely punctured, intermediate and posterior tibiæ armed with spines, calcaria black; abdomen ovate, basal segment campanulate, black, finely punctured at apical margin; second segment blackish castaneous, finely punctured, with a broad band of scarlet pubescence, deeply emarginate at basal and apical margins, in some individuals almost forming two large ovate spots; third segment black, remaining segments clothed with scarlet pubescence; ventral surface black or castaneous, finely punctured. Length 16–27 mm.

Hab.—North America.

This is the largest and most conspicuous species we have, and is very abundant in individuals. The vestiture varies considerably, the pubescence is sometimes ochraceous or fulvous, more especially in the males. In some males the apical segments are entirely covered with scarlet pubescence, while others are banded with black.

Sphærophthalma andreniformis Smith.

Male.—Black, densely pubescent, that on the vertex and mesothorax bright ochraceous, on the legs and rest of the body it is cinereous, tinged with yellow on the abdomen above; the wings smoky hyaline, having a broad darker band on their apical margins; the abdomen petiolated, the petiole having a broad longitudinal groove, not quite reaching the apex, and on each side an obtuse tooth near its base; the abdomen is strongly punctured and shining. Length 9 mm.

Hab.—Mexico.

Sphærophthalma crenusa Cresson.

Female.—Black, closely and roughly punctured; head not wider than the thorax, piceous-black, with black pubescence; the vertex with golden ferrugin-

ous pubescence; eyes small, rounded, entire and covex; antennæ black, the flagellum sericeous; thorax elongate, slightly narrowed behind the middle, rufopiceous above, with dense golden ferruginous pubescence, the sides and beneath black, with sparse black pubescence; metathorax very abruptly truncate behind; legs entirely black, shining, with black pubescence; abdomen large, ovate, densely and finely punctured, black, with black pubescence, except the large basal segment above, which is densely clothed with golden ferruginous pubescence, almost concealing two large, ill-defined, nearly confluent, ferruginous spots on the disk; the pubescence on the upper surface of the third segment is mixed with golden; the node black, short, circular at tip and depressed at base, with a short emarginate process beneath; venter entirely black and somewhat shining. Length 16 mm. (Cresson.)

Hab.—Colorado.

This may be the female of *S. bioculata*.

Sphærophthalma antiguensis Fab.

Male.—Body with dense, bright scarlet red hairs above; beneath black; antennæ and inferior part of the head black; wings black violaceous; radial cellule truncate at tip; third cubital cellule pentagonal, contracted on the anal side, its apical nervures almost obsolete; metathorax black; abdomen, anterior declivity of the basal segment extending in an angle on the superior portion of the segment, black; petiole black; venter with a slight scarlet red band rather behind the middle. Length about nine-twentieths of an inch, 12 mm. (Say.)

Female.—Head very large, of a ferruginous scarlet, the parts of the mouth black; antennæ black; thorax of a ferruginous scarlet; abdomen black, clothed with black hairs, second segment scarlet, having sometimes a small black spot near the base; apical margins of the last three segments fringed with silvery pubescence; legs black, clothed with black hairs; spines black. Length 15 mm. (St. Farg.)

Hab.—Antigua, Mexico.

Sphærophthalma medea Cresson.

Female.—Deep black, coarsely punctured; head entirely black, suborbicular, not wider than the thorax, clothed with coarse black pubescence; eyes small, rounded, entire and convex; antennæ black, the flagellum sericeous; thorax elongate, slightly narrowed behind the middle, clothed above with dense yellowish ferruginous pubescence, on the sides and beneath with black pubescence; abdomen ovate, black, closely punctured, the punctures not so rough as those of the thorax; the large basal segment above obscure ferruginous and densely clothed with yellowish ferruginous pubescence, the extreme base, the sides and the rest of the abdomen with black pubescence. Length 14.5 mm. (Cresson.)

Hab.—Colorado.

Sphærophthalma bioculata Cresson.

Male.—Black; closely punctured, densely clothed with long black pubescence; head entirely black; eyes small, round, entire and very convex; antennæ nearly as long as the head and thorax, black, the flagellum sericeous; thorax ovate, clothed above with long, dense, yellowish ferruginous or golden yellow pubescence, beneath with black pubescence, as well as the metathorax, which is broad.

rather abrupt behind and coarsely reticulated; tegulæ punctured, shining; wings ample, blackish, sometimes slightly paler about the middle, with a longitudinal subhyaline streak in the second submarginal and second discoidal cells; marginal cell short, broadly truncate at tip and not exceeding the tip of the third submarginal cell; three submarginal cells, the first longer than the marginal, pointed at either end; the second as long as the marginal, pointed at base and greatly narrowed towards the marginal, receiving the first recurrent nervure about one-third from the base; the third submarginal subobsoletely defined, short, the tip extending beyond the marginal cell and pointed, the side nervures descending almost parallel below the middle to the cubital nervure, where the apical nervure becomes confluent with the second recurrent nervure; legs deep black, with black pubescence; abdomen oblong ovate, gradually narrowed to the tip, black, somewhat shining, closely and finely punctured, clothed above with dense black pubescence, especially on the apical margins of the third and following segments, large basal segment clothed, except at base, with short, dense, yellowish ferruginous or golden yellow pubescence, but not so dense as to hide two large, round, yellowish ferruginous spots, one on each side behind the middle of the segment; these spots appear sometimes more or less confluent, having the appearance of a broad band; the node is short and shining black, with a sparse black pubescence except on the apical margins of the segments, where it is dense. Length 11-17 mm.; expanse of wings 19-28.5 mm. (Cresson.)

Hab.—Colorado.

Sphærophthalma asopus Cresson.

Male.—Black, with large, close, deep punctures, and long black pubescence; head, above the antennæ, clothed with long red pubescence; eyes small, rounded, entire and convex; antennæ black at base, the flagellum brown sericeous; thorax: prothorax, mesothorax and scutellum rufous and clothed with long, dense, bright red pubescence; pleura and metathorax rufo-piceous, the latter more reddish at base, reticulate with coarse punctures and clothed with long thin black pubescence; tegulæ with reddish pubescence; wings blackish, paler about the middle, with a subhyaline dash in the second submarginal and second discoidal cells; marginal cell short, very abruptly and broadly truncate at tip; two distinct submarginal cells, the first as long as the marginal, the second a little shorter, receiving the first recurrent nervure about the middle; the third submarginal cell obsoletely defined; legs entirely black, with black pubescence; abdomen ovate, gradually narrowed behind, the punctures not so large as those of the thorax; large basal segment rufous, less bright beneath, with a blackish longitudinal stripe on the dividing suture between the dorsal and ventral surface, except extreme base and apex is clothed with a dense, bright red pubescence; on the rest of the abdomen the pubescence is deep black, large ventral segment with a central longitudinal carina, more sharply developed on the posterior half of the segment. Length 11.5 mm.: expanse of wings 19.5 mm. (Cresson.)

Hab.—Colorado.

This may be the male of *S. ægina*, as it resembles that species in the distribution of color.

Sphærophthalma hector Blake.

Male.—Head black, round, coarsely punctured, clothed with coarse ferruginous pubescence; eyes small, round, prominent; antennæ black, scape closely punc-

tured; thorax ovate, posteriorly narrowed, pro- and mesothorax clothed above with dense, coarse, ferruginous pubescence, metathorax roundly truncate, coarsely reticulate, dorsal groove not extending to the middle, sides closely punctured; wings fuliginous, marginal cell subovate, truncate at tip, first submarginal nearly as large as the marginal, second wide beneath, receiving the recurrent nervure before the middle, its apical nervure arcuate; legs black, with scattered black hairs; abdomen ovate, basal segment campanulate, black, closely punctured, second segment fulvo-ferruginous, finely punctured, bearing a scattered ferruginous pubescence, its basal and apical margins black, remaining segments black, clothed with dark ferruginous pubescence; ventral surface of second segment with a longitudinal carina. Length 12 mm.; expanse of wings 19 mm.

Hab.—Kansas. Collection of Mr. Norton.

This may prove to be the male of *S. œgina* Cresson.

Sphærophthalma monticola Cresson.

Male.—Black, closely and deeply punctured; head and thorax clothed above with long, dense, grayish ochraceous pubescence, beneath with black pubescence; eyes small, round, entire and very convex; antennæ black at base, the flagellum brown sericeous, metathorax rounded, rather abrupt behind, reticulate with coarse punctures and clothed with black pubescence; wings blackish, paler about the middle; marginal cell short, truncate at tip, not exceeding the tip of the third submarginal cell; three submarginal cells, the first as long as the marginal, the second shorter, much narrowed towards the marginal, receiving the first recurrent nervure one-fourth from the base, the third submarginal subobsoletely defined, subtriangular, extending beyond the marginal cell, pointed towards the apex of the wing and much narrowed beneath, the apical nervure confluent with the second recurrent nervure; a curved subhyaline line commences at the stigma and runs through the first and second submarginal cells and at the tips of the latter it becomes confluent with a spot on the upper margin of the second discoidal cell; legs piceous black, with black pubescence, the tibiæ and tarsi more or less tinged with brownish; abdomen short, broad ovate, or subglobose, ferruginous, or honey yellow above and beneath, closely and rather deeply punctured, clothed with black pubescence, rather thin on the large basal segment and dense on the apical margins of all the segments; the apex with a patch of glittering grayish ochraceous pubescence, the venter also sprinkled with a similar pubescence; the node sometimes blackish, rugose, swollen at tip, with a prominent central carina beneath. Length 8.5–11 mm.; expanse of wings 14–17 mm. (Cresson.)

Hab.—Colorado.

Sphærophthalma hispida n. sp.

Male. Head transversely rounded, narrowed behind the eyes, black, closely punctured, clothed with erect black pubescence; mandibles and scape of antennæ black, the latter closely punctured, flagellum piceous; eyes large, round and prominent; thorax elongate ovate, narrowed posteriorly, closely punctured, thinly clothed with erect black hairs, metathorax roundly truncate, coarsely reticulate; legs black, clothed with black hairs; wings fuliginous, marginal cell ovate, roundly truncate at tip, first submarginal cell as large as the marginal, second triangular, its transverso-cubital nervures sinuate, receiving the first recurrent nervure before the middle; a hyaline spot common to the third dis-

coidal and second submarginal cells, terminating in a streak, extending to the first submarginal cell; tegulæ round, polished; abdomen roundly ovate, basal segment petiolate, black, coarsely punctured, clothed with erect black hairs, second segment dark ferruginous, finely punctured, clothed with long fulvo-ferruginous pubescence, remaining segments black, densely clothed with long, coarse, black pubescence; ventral surface entirely black, second segment finely punctured, shining. Length 9 mm.; expanse of wings 16 mm.

Hab.—Colorado.

This species is allied to *S. monticola* Cresson, but may be separated by the head and thorax being black, and the ventral surface entirely so, and by the wings being fuliginous, whereas in *monticola* they are fuscous.

Sphærophthalma castor Blake.

Male.—Black; head rounded, closely punctured, clothed with erect black hairs; eyes round, prominent; thorax elongate subquadrate, anterior angles rounded, densely punctured, thinly clothed with long black pubescence, metathorax roundly truncate, closely reticulate; tegulæ round, polished; wings ample, blackish, marginal cell elongate subquadrate, truncate at tip, second submarginal subtriangular, wide beneath, receiving the first recurrent a little before the middle, third subpentagonal, so much narrowed at base that its extreme nervure is opposite to and joins the second recurrent; legs black, thinly clothed with black hairs; abdomen ovate, petiolate, petiole closely punctured, having a longitudinal carina on each side, clothed with erect blackish hairs, disc dark ferruginous, base and apical margin black, second segment having the basal half castaneous, apical half bright ferruginous, apical margin and following segments black, clothed with dense black pubescence; under side of second segment castaneous, the abdominal fovea large and deep. Length 12–18 mm.; expanse of wings 19–27 mm.

Hab.—Kansas, Texas.

In some individuals the petiole and basal half of second abdominal segment is entirely black. The neuration of the wings in this species is similar to that of *S. contracta* described by Say.

Sphærophthalma macer n. sp.

Male.—Head transversely rounded, black, finely punctured, thinly clothed with mixed pale and black hairs; mandibles and antennæ black, eyes round and prominent; thorax ovate, closely punctured, black, metathorax roundly truncate, coarsely reticulate, lateral declivities of the mesothorax smooth and shining; legs black, thinly clothed with pale hairs, as well as thorax beneath; wings fuliginous, marginal cell ovate roundly truncate at tip, first submarginal cell large, pointed at base and apex, second subtriangular, and having a faint hyaline streak longitudinally through its entire length, and receiving the first recurrent nervure before the middle; tegulæ round, finely and remotely punctured anteriorly; abdomen ovate, basal segment petiolate, black, coarsely punctured, second and following segments finely punctured, feebly pubescent with black, fusco-ferruginous, second segment paler on disc, apical margins fringed with blackish pubes-

cence, except apex, which is pale yellow, lateral carinæ of second segment prominent, ventral surface somewhat paler than above, apex black. Length 8–12 mm.; expanse of wings 14–20 mm.

Hab.—Kentucky, Colorado, Montana.

This species is allied to *S. castor* Blake, but can easily be separated by the abdomen being entirely, except basal segment, fusco-ferruginous, whereas in that species the apical segments are black. In some specimens the pubescence is entirely black.

Sphærophthalma fenestrata St. Farg.

Male.—Black; head and thorax with black pubescence; wings blackish, marginal cell truncate at tip; abdomen petiolate, second segment pale ferruginous, nearly naked, apical segments clothed with black pubescence; eyes round. Length 11–13 mm.; expanse of wings 19 mm.

Hab.—Atlantic States.

Sphærophthalma ochracea Blake.

Male.—Black; head, thorax and abdomen, with exception of the first, and basal half of second segments, clothed with long, erect, ochraceous pubescence; head round, closely punctured; eyes prominent, round, polished; antennæ black, scape finely punctured; thorax robust, ovate, metathorax abruptly truncate, coarsely reticulate, flanks coarsely punctured; wings fuliginous, marginal cell short, truncate at tip, three distinct submarginal cells, first longer than the marginal, the second subquadrate, receiving the first recurrent nervure near the base, the third pentagonal, extending beyond the marginal; tegulæ large; legs black, clothed with black hairs; abdomen ovate, basal segment coarsely punctured, clothed with erect black hairs, second more moderately punctured; under side black. Length 16 mm.

The female differs in having the sculpture of thorax much coarser and the pubescence somewhat paler. Length 12 mm.

Hab.—Nevada. (Morrison.)

This species closely resembles *aureola* Cresson, but may be distinguished by the smaller size of the head.

Sphærophthalma creon Blake.

Male.—Ferruginous; head round, closely punctured, thinly clothed with erect black hairs; scape of antennæ castaneous, flagellum piceous; eyes round, prominent; thorax ovate, densely punctured, sparsely clothed with erect black hairs, metathorax roundly truncate, coarsely reticulate; wings moderate, fuscous, subhyaline from base to beyond the middle, marginal cell subovate, roundly truncate at tip, three submarginal cells, second subtriangular, receiving the first recurrent nervure at middle, third narrowed beneath, receiving the second recurrent close to its apical nervure; tegulæ round, tufted posteriorly with pale hairs; legs black, thinly clothed with whitish hairs; abdomen ovate, petiolate, basal segment densely punctured, second segment fulvo-ferruginous, darker at base, finely and closely punctured, apical margin black, third, fourth and fifth segments black, clothed with long black pubescence, apical segments with pale yellowish; ventral segments fringed with pale yellowish hairs; apex with two sharp longitudinal carinæ. Length 11 mm.; expanse of wings 14 mm.

Hab.—Texas. One specimen.

Sphærophthalma bexar Blake.

Male.—Black; head rounded, not as wide as the thorax, closely punctured, thinly clothed with erect black hairs; antennæ black, as long as the head and thorax; eyes round, prominent; thorax subquadrate, slightly narrowed posteriorly, prothorax closely covered with confluent punctures, those on the mesothorax finer; metathorax roundly truncate, coarsely reticulated, dorsal groove not extending to the middle; wings ample, fuliginous, slightly paler about the middle, marginal cell elongate subquadrate, abruptly truncate at tip, first submarginal nearly as large as the marginal, second receiving the first recurrent nervure a little before the middle, third pentagonal, its extreme nervure extending beyond the marginal; tegulæ ovate, punctured; legs black, clothed with black hairs; abdomen subpetiolate, first segment black, closely punctured, second bright ferruginous, finely punctured, thinly clothed with reddish pubescence; remaining segments blackish, punctured, clothed with black pubescence; under side of second segment bearing a short longitudinal carina towards the apical margin, ventral segments same as above. Length 9–12 mm.; expanse of wings 15–21 mm.

Hab.—Texas.

Sphærophthalma waco Blake.

Female.—Dark fuscous; head quadrate, posterior angles rounded, not quite as wide as the thorax, closely reticulated, clothed with erect black hairs; scape of antennæ black, flagellum piceous; mandibles black; eyes round, polished; thorax short, subquadrate, closely reticulated, metathorax abruptly truncate; legs black, clothed with fuscous hairs, intermediate and posterior tibiæ armed with spines; abdomen: basal segment subsessile with the second, closely punctured, clothed with black hairs; second segment bright ferruginous, finely reticulated, clothed with scattered ferruginous pubescence and a few black hairs at base; apical segments dark fuscous, fringed with dark ferruginous pubescence; under side chestnut brown, coarsely punctured, clothed with scattered, pale, glittering hairs. Length 11 mm.

Hab.—Texas.

Taken on sandy roads.

Sphærophthalma admetus Blake.

Male.—Head and thorax black; the former round, not as wide as the thorax, coarsely punctured, thinly clothed with erect hairs; antennæ black; eyes round, prominent; thorax ovate, narrowed posteriorly, coarsely punctured, metathorax roundly truncate, deeply reticulate; wings fuliginous, marginal cell short, roundly truncate at tip, second submarginal subtriangular, its basal nervure sinuate, receiving the first recurrent nervure before the middle, third submarginal indistinctly defined; legs black, thinly clothed with black hairs; abdomen ovate, petiolate, basal segment black, coarsely punctured, second and following segments dark ferruginous, closely punctured, thinly clothed with erect black hairs, margins of the segments fringed with black pubescence. Length 13 mm.; expanse of wings 18 mm.

Hab.—Texas.

This may be the male of *S. waco*.

Sphærophthalma macra Cresson.

Male.—Elongate, rather slender, black, with long, dense, coarse, black pubescence, and close, rather rough punctures; eyes small, round, entire and very convex; mandibles rufo-piceous at base; antennæ black, the flagellum sericeous; thorax slightly narrowed behind, the metathorax rounded, somewhat abrupt behind and reticulate with coarse punctures; wings blackish, with two or three pale streaks beneath the stigma; marginal cell broadly truncate at tip, not exceeding the tip of the third submarginal cell; two distinct submarginal cells, the first about as long as the marginal, the second a little short, much narrowed towards the marginal and receiving the first recurrent nervure near the base; third submarginal cell subrhomboidal, indistinctly defined, the outer nervure being obsolete; legs black, with black pubescence; abdomen petiolate, ovate, much narrowed towards the tip, black, with long, dense, black pubescence above, shining beneath; large basal segment above orange ferruginous, with pubescence of the same color and close, rather deep punctures; the node rather elongate, swollen at tip, coarsely rugose, the base depressed, with a short, stout tubercle on each side; venter shining and sparsely pubescent, the second segment closely punctured. Length 11 mm.: expanse of wings 15 mm.

Var. *β*.—Head and thorax black, with grayish pubescence; abdomen more or less reddish.

Hab.—Texas.

Closely allied to *S. fenestrata* St. Farg., (the supposed male of *S. ferrugata* Fab.) but is distinct.

Sphærophthalma apicalata Blake.

Male.—Head round, black, clothed with pale golden pubescence; antennæ black; eyes round, prominent; thorax coarsely punctured, pro- and metathorax clothed with scattered pale golden pubescence, the latter roundly truncate, scutellum black; wings fuscous, paler about the middle, marginal cell sublanceolate, rounded at tip, first submarginal as large as marginal, second subtriangular, receiving the first recurrent nervure about the middle, third extending as far as the marginal; tegulæ large; legs black, clothed with pale glittering hairs, calcaria white; abdomen petiolate, petiole black, closely punctured, clothed with erect silvery hairs; second segment ferruginous, finely punctured, apical margin black, disc clothed with scattered erect hairs, third, fourth and fifth segments clothed with silvery pubescence, apex black; under side same as above. Length 11 mm.; expanse of wings 19 mm.

Var. *a*.—Second abdominal segment entirely ferruginous; third, fourth and fifth segments sparsely clothed.

Hab.—Mexico. Prof. F. Sumichrast.

Sphærophthalma canella Blake.

Male.—Black; head narrower than the thorax, subquadrate, posterior angles rounded, closely punctured, clothed with long black erect hairs, eyes large, round, convex; antennæ black, having the scape clothed with scattered black hairs; thorax subquadrate, narrowed posteriorly, mesothorax elevated, closely punctured, metathorax roundly truncate, having the punctures much coarser and denser; wings moderate, blackish, paler about the middle, marginal cell abruptly truncate at tip; three submarginal cells, the second subtriangular, receiving the

first recurrent nervure a little before the middle, third, obsoletely defined, extending a little beyond the marginal cell; legs black, clothed with long hairs of the same color, tibial spurs long; abdomen ovate, gradually narrowed behind, basal segment nodose, coarsely punctured; second segment shining ferruginous, darker towards the base, finely punctured, thinly clothed with blackish hairs, lateral carinæ distinct; apical segments clothed with long dense, black pubescence, under side of entire abdomen closely punctured. Length 7 mm.; expanse of wings 13 mm.

Hab.—Texas.

Sphærophthalma macilenta Blake.

Male.—Black; head rounded, not as wide as the thorax, closely punctured, thinly clothed with erect black hairs; eyes round, prominent; antennæ black; thorax robust, gradually narrowed behind, closely punctured, thinly clothed with erect black hairs; metathorax abruptly rounded; wings moderate, fuliginous, marginal cell broad, short, and obtusely rounded at tip, second submarginal subquadrate, not as large as the first, receiving the first recurrent nervure a little before the middle, third submarginal obsolete; legs black, thinly clothed with pale hairs, calcaria long, rufo-piceous; abdomen elongate ovate, basal segment elongate, much enlarged at apex, shining, closely punctured; second segment ferruginous, shining, finely punctured, thinly clothed with erect blackish hairs; lateral carinæ distinct, ventral surface having a central black line; apical segments closely fringed with long black hairs. Length 8.5 mm.; expanse of wings 13 mm.

Hab.—Texas.

Sphærophthalma obscura Blake.

Male.—Head black, rounded, closely punctured, clothed with obscure black and golden hairs; eyes round, polished; antennæ black, scape finely punctured; thorax subovate, narrowed posteriorly, closely punctured, prothorax clothed with obscure yellow hairs, metathorax coarsely reticulated; tegulæ convex, punctured; wings fuliginous, paler about the middle, marginal cell elongate ovate, rounded at tip, first submarginal moderately large, second subquadrate, receiving the recurrent nervure before the middle, third obsolete; legs black, clothed with black hairs, calcaria pale; abdomen petiolate, black, closely punctured, bearing a few erect black hairs; second and following segments dark brown, closely punctured, apical margins clothed with black pubescence, apex bearing a few obscure yellow hairs. Length 8.5 mm.; expanse of wings 13 mm

Hab.—Massachusetts. Collection of Prof. Agassiz.

Sphærophthalma gibbosa Say.

Male.—Body black; with numerous gray, but not concealing, hairs; densely punctured, punctures large on the head and trunk; wings hyaline; at tip and including the radial cellule, fuliginous; stigma moderate; third cubital cellule incomplete; abdomen, first segment petioliform, as long as the second and somewhat gibbous at tip, distinguished from the second by a deep stricture. Length over three-tenths of an inch, 11 mm. (Say.)

Hab.—Indiana.

Resembles *scrupea*, but is larger, has a stigma and longer petiole; wings dusky at tip, and the petiole more gibbous at tip.

Sphærophthalma Wilsoni Cresson.

Male.—Deep shining black; head small, subglobose, rather densely clothed with silvery cinereous pubescence; eyes small, rounded, prominent and olive-green; antennæ black; thorax closely punctured, the prothorax broad and rather densely clothed with silvery white pubescence as well as the pleura; mesothorax deeply punctured, clothed with short black pubescence; scutellum clothed with long cinereous pubescence, with its anterior margin flattened, smooth and shining, and armed on each extreme side with a stout tooth, obtusely bifid or constricted at tip; postscutellum silvery on the middle and sides; metathorax covered with numerous interlacing, well defined carinæ with appressed, silvery white pubescence; tegulæ black, polished; wings hyaline, the anterior pair with a median transverse band, and the apical fourth dark fuscous; nervures blackish, marginal cell short, truncate at tip; two complete submarginal cells, the second largest and receiving the first recurrent nervure near the base; posterior wings hyaline, slightly dusky at tips; legs slender, black, clothed with whitish pubescence; apical spurs of four posterior tibiæ long and whitish; abdomen black, the first segment small, narrow at base and swollen at tip, roughly punctured, with a small tubercle on each side of the base and middle; apical margin densely clothed with silvery white pubescence; second segment large, convex, shining black, finely punctured, clothed with black pubescence, the basal third with silvery white pubescence; third and fourth segments densely clothed with silvery white pubescence, the remaining segments with dense black pubescence. Length 9.5 mm.; expanse of wings 18 mm. (Cresson.)

Hab.—Cuba.

Sphærophthalma azteca Blake.

Male.—Black; head not as wide as the thorax, subquadrate, clothed with dense, pale golden pubescence; antennæ and mandibles black; eyes round, prominent; thorax robust, narrowed posteriorly, pro- and mesothorax rugose, the former with pale golden pubescence, the latter elevated, metathorax coarsely reticulated, abruptly truncate behind; wings fusco-hyaline, marginal cell short, abruptly truncate at tip, first submarginal about as large as marginal, second receiving the first recurrent nervure a little before the middle, third about equal to the second and extending a little beyond the marginal; legs petiolate coarsely punctured, clothed with scattered, erect, whitish hairs; second segment rugulose, with a broad band of pale golden pubescence at the base, posterior half clothed with black, third and fourth segments clothed with pale golden pubescence, apex black; under side of second segment finely punctured, thinly clothed with pale hairs; margins of ventral segments fringed with pale golden pubescence. Length 12 mm.; expanse of wings 16 mm.

Hab.—Mexico. Prof. F. Sumichrast.

This species is closely allied to *Wilsoni* Cresson, but may be distinguished by the large size of abdomen and the clothing, which is much more dense, and the clouding of the wings, which is more suffused; the margins of the fuscous portions in *Wilsoni* being sharply defined.

Sphærophthalma montezumæ Spin.

Female.—Head black, with black hairs, front and vertex clothed with depressed reddish golden pubescence; antennæ black; thorax black, with black hairs, the dorsum clothed with depressed reddish golden pubescence; abdomen black, ven-

tral segments fringed with silvery pubescence; first segment above clothed with black hairs; the remaining segments clothed with depressed reddish golden pubescence; legs black, with black hairs, spines black. Length 9 mm.

Hab.—Mexico.

Sphærophthalma melanosoma Blake.

Female.—Deep black, head rounded, with narrow lunate band of pale golden pubescence between the eyes; antennæ black, scape clothed with fine glittering hairs; eyes round, prominent; thorax subquadrate, narrowed posteriorly, coarsely reticulated, anterior angles armed with a short tooth; mesothorax with two subovate spots of pale golden pubescence, behind which, on the metathorax, are two narrow longitudinal lines of the same; legs black, thinly clothed with glittering white hairs, intermediate and posterior tibiæ armed with a row of spines, calcaria white, tipped with brown; abdomen ovate, clothed with dense black pubescence, second segment with two small, ovate, dusky fulvous maculæ at the base, and two larger ones of the same before the apical margin, on the middle of which is a small round spot of pale golden pubescence, the apical segments adorned with a row of similar spots; ventral segments and lateral sutures clothed with pale golden pubescence. Length 16 mm.

Hab.—Panama. Collection of Mr. Norton.

Sphærophthalma iztapa Blake.

Male.—Black; head round, not as wide as the thorax, clothed with coarse fulvous pubescence; antennæ and mandibles black; eyes round, prominent; thorax short, dilated at middle, pro- and disc of metathorax clothed with coarse fulvous pubescence, the latter roundly truncate, coarsely punctured, clothed with long, pale, erect hairs; wings fuliginous, subhyaline at middle, marginal cell subovate, abruptly truncate at tip, second submarginal elongate, pointed towards the base, near which it receives the recurrent nervure; tegulæ round, finely punctured; legs black, clothed with pale hair, calcaria long; abdomen ovate, second segment finely punctured, with a broad, lunate, polished, dull yellowish band on the disc, bearing a thin scattered pubescence, posterior margin and third segment clothed with black pubescence, apical segments clothed with pale fulvous; under side of entire insect sprinkled with pale hairs. Length 13 mm.; expanse of wings 23.5 mm.

Hab.—Honduras. Collection of Mr. Norton.

This may prove to be the male of *proserpina*.

Sphærophthalma proserpina Blake.

Female.—Black; head round, not as wide as the thorax, clothed with dense bright cupreous pubescence; antennæ and mandibles black; eyes round, prominent; thorax robust, subquadrate, sides produced into an obtuse tooth, anterior angles acute, mesothorax black, rugose; metathorax abruptly truncate behind, clothed with dense bright ferruginous pubescence, having a central black patch on the posterior surface; legs black, finely punctured, clothed with silvery hairs, intermediate and posterior tibiæ armed exteriorly with long sharp spines; abdomen ovate, closely punctured, basal segment dentate at base, second segment with four pale luteous spots, thinly clothed with pubescence of the same color, the two at the base round, those near the apical margin ovate, the fourth segment and the sides of the others clothed with pale golden pubescence; lateral carinæ distinct; under side of entire insect clothed with pale hairs. Length 12 mm.

Hab.—Honduras. Collection of Mr. Norton.

Sphærophthalma mixtura Blake.

Female.—Ferruginous; head round, scarcely as wide as thorax, vertex clothed with pale golden pubescence; eyes prominent, flagellum of antennæ fuscous, slightly pruinose, tips of mandibles blackish; thorax subovate, narrowed posteriorly, clothed above with pale golden pubescence; metathorax obliquely truncate, flanks coarsely punctured; legs thinly clothed with white hairs, spines of the tarsi black; abdomen ovate, closely punctured, thinly clothed with mixed black and yellow hairs, apical half of second segment pale ferruginous, margin blackish, apical margin above and beneath fringed with glittering whitish hairs. Length 7 mm.

Hab.—Colorado.

Sphærophthalma Cressoni Blake.

Female.—Black; clothed with dense golden pubescence; head subquadrate, somewhat narrower than the thorax, posterior angles rounded; antennæ rufopiceous, flagellum clothed with scattered glittering hairs; eyes prominent, polished, rounded; thorax subovate, narrowed posteriorly and abruptly truncate, mesothorax with lateral carinæ, disc black, coarsely granulate, with a few scattered black hairs and margined with dark golden pubescence; abdomen ovate, deeply punctured, basal segment black, the apical margin fringed with pale pubescence, second segment with two ovate fulvous spots at the basal margin and a broad anteriorly emarginate band of the same color near the apical margin, clothed with deep golden pubescence; third and fourth segments black, with a longitudinal line of paler pubescence, forming the black ground into two lateral quadrate spots; fifth and sixth segments clothed entirely with pale golden pubescence, apex black; ventral segments fringed with pale golden hairs; legs black, intermediate and posterior tibiæ armed with a row of spines and clothed with long pale hairs; entire insect beneath clothed with long pale glittering hairs. Length 19 mm.

Hab.—Mexico.

Sphærophthalma Nortoni Blake.

Female.—Head rounded, wider than the prothorax, posterior angles more acute than in the preceding species, coarsely punctured, clothed with short golden pubescence, interspersed with longer hairs; antennæ black, naked; eyes round, prominent, polished; thorax black, narrowed posteriorly, somewhat constricted, coarsely punctured, with a broad discal band clothed with appressed, bright golden pubescence, metathorax slightly truncate, sides clothed with a dense silvery pile; abdomen ovate, coarsely punctured, basal segment clothed with pale golden pubescence; second segment with four orange spots, clothed with a scattered golden pubescence, the two at the basal margin subtriangular, those on the apical margin are larger and nearly joined together, third and fourth segments black, fifth and sixth with golden pubescence, apex black; ventral segments fringed with long pale hairs; legs black, middle and posterior tibiæ and tarsi clothed with silvery hairs, those on the tarsi being longer and much more dense; under side of thorax and abdomen clothed with obscure grayish hairs. Length 17 mm.

Hab.—Mexico.

Closely resembles *S. Cressoni*, but is readily distinguished by the bands on the thorax and by the less robust form.

Sphærophthalma toluca Blake.

Female.—Black; head rounded, clothed with dense, pale, ochraceous pubescence; antennæ black; eyes round, prominent; thorax ovate, narrowed posteriorly, clothed with coarse, black, meso- and metathorax with coarse ochraceous pubescence, sides of the latter black, abruptly truncate; legs black, clothed with scattered glittering hairs, intermediate and posterior tibiæ armed with spines; abdomen ovate, basal segment clothed with pale hairs; second segment closely punctured, having two small ovate spots at the base and a broad, internally emarginate band of coarse ochraceous pubescence, pointed towards the apex; apical segments clothed with similar pubescence; under side of entire insect clothed with pale hairs. Length 11 mm.

Hab.—Mexico. Prof. F. Sumichrast.

Sphærophthalma luteola n. sp.

Female.—Head black, rounded, not quite as wide as the thorax, clothed on vertex with pale golden pubescence, front and mouth densely, with pale luteous pubescence; eyes large, round and prominent; antennæ fuscous, cheeks finely and confluently punctured; thorax ovate, black, closely punctured, clothed above with pale golden pubescence, metathorax obliquely truncate, its posterior surface clothed with white pubescence; legs nigro-castaneous, clothed with long, glittering white hairs, femora very finely and remotely punctured, intermediate and posterior tibiæ armed with fuscous spines; abdomen black, ovate, basal segment campanulate, short and sessile with the second, its apical margin fringed with dense, pale, luteous pubescence; second segment coarsely reticulate and clothed with black pubescence, its apical margin and remaining segments densely clothed with pale golden pubescence; ventral surface finely punctured, the apical margins fringed with white pubescence; entire insect sparsely clothed with long glittering white hairs. Length 10-12 mm.

Hab.—Utah, Kansas.

This species is allied to *S. toluca* Blake, but differs from that by the absence of the pubescent spots. It may possibly prove to be the female of *S. flavida*.

Sphærophthalma ariadne Blake.

Female.—Head rounded, not quite as wide as the thorax; black, rugose, with a few scattered erect hairs; antennæ black; eyes round, polished; thorax short, suddenly narrowed behind, clothed with bright golden pubescence; mesothorax with a triangular black, granulate patch; mesothorax abruptly truncate; sides deeply compressed, coarsely punctured, clothed with silvery pubescence; legs black, clothed with scattered silvery hairs, intermediate and posterior tibiæ armed exteriorly with a row of spines; abdomen ovate, basal segment black, its apical margin clothed with silvery pubescence; second segment coarsely punctured, clothed with bright golden pubescence, having on the disc a large ovate black patch extending to the basal margin, on each side of which is a small one of the same color with thin black pubescence; apical margin black; third and fourth segments clothed with dense black pubescence, fifth bright golden,

apex black; under side black, closely punctured, ventral segments fringed with pale golden mixed with silvery hairs. Length 7-11 mm.

Hab.—Mexico. Prof. F. Sumichrast.

In some specimens the head is clothed with a dense golden pubescence.

Sphærophthalma sololæ Blake.

Female.—Black; head rounded, densely clothed with coarse, deep golden pubescence; antennæ black; eyes round, prominent; thorax short, clothed similar to the head, except a round black patch on the disc of mesothorax, which is laterally produced into obtuse angles, metathorax abruptly truncate behind: legs black, thinly clothed with pale hairs; intermediate and posterior tibiæ armed exteriorly with a row of strong spines, calcaria black; abdomen broadly ovate, closely punctured, basal segment small, second segment having a broad emarginate band of deep golden pubescence at its apical margin and two round spots of the same color placed laterally near the base; third segment clothed with deep black, apical segments with pale golden pubescence; under side coarsely punctured, lateral carinæ distinct, ventral segments fringed with pale glittering hairs. Length 7-8.5 mm.

Hab.—Guatemala. Prof. F. Sumichrast.

Closely allied to *S. Cressoni.*

Sphærophthalma arachnoides Smith.

Female.—Black; densely pubescent, that on the head ochraceous; thorax and legs covered with ochraceous pubescence, the former having a large rounded patch of black on the disc; the abdomen is also covered with ochraceous pubescence, the second segment having a large trilobate black pubescent patch, which extends from the basal to the apical margin of the segment; the fifth and sixth segments are covered with black pubescence, the sides being pale. Length 12 mm.

Hab.—Mexico.

A very distinct and well marked species. In the series before me the individuals vary in length from 11 mm. to 14 mm.

Sphærophthalma formosa Blake.

Female.—Head quadrate, slightly wider than the thorax, clothed with dense bright golden pubescence, interspersed with erect hairs of the same color; antennæ piceous, mandibles rufo-piceous, tips black; eyes round, prominent; thorax short, subovate, finely reticulated, anterior margin fringed with deep golden pubescence, behind which is a lunate patch of brownish black, apical half clothed with glittering pale golden pile, metathorax roundly truncate, with a small obtuse black tooth on each side; sides of thorax clothed with silvery pubescence; legs rufo-piceous, clothed with glittering silvery hairs, intermediate and posterior tibiæ armed with a row of spines, posterior femora with an acute tooth, calcaria pale yellow tipped with brown; abdomen ovate, apical margin of basal segment clothed with silvery pubescence, second segment clothed with glittering, pale golden pile, with a round patch of black pubescence at the base, connected with the apical margin, which is of the same color, by a nar-

row line, third and fourth segments clothed with pale, the fifth with dark golden pubescence, apex black; under side closely punctured, thinly clothed with silvery hairs, lateral sutures fringed with silver, ventral segments same as above. Length 6.5–12 mm.

Hab.—Mexico. Prof. F. Sumichrast.

Sphærophthalma balopilus Blake.

Female.—Head quadrate, wider than the thorax, posterior angles subacute, clothed with dense golden pubescence; antennæ rufo-piceous; eyes round, prominent; thorax subovate, closely reticulate, narrowed posteriorly, clothed with golden pubescence, mesothorax with a subcordate black patch on the disc, metathorax abruptly truncate: legs rufous, thinly clothed with fine, glittering hairs, calcaria pale; abdomen ovate, second segment thinly clothed with glittering golden pile, on the disc is a round, brown-black spot connecting with the apical margin, which is black, remaining segments clothed with golden pubescence; ventral segments fringed with pale hairs. Length 8–10 mm.

Hab.—Mexico. Prof. F. Sumichrast.

Sphærophthalma altamira Blake.

Female.—Head rounded, not as wide as thorax, clothed with bright golden pubescence, interspersed with erect hairs; antennæ and mandibles black; eyes round, prominent; thorax short, slightly dilated at middle, closely reticulated, anterior angles acute, mesothorax black, metathorax abruptly truncate, clothed with bright golden pubescence, a round black spot on the disc, on each side of which is a small tubercle; legs black, thinly clothed with glittering hairs; abdomen ovate, narrowed to apex, basal segment black, closely punctured, apical margin clothed with bright, pale golden pubescence; second segment thinly clothed with glittering golden pubescence, bearing on disc a large subtriangular black patch, below which the tegument has a pale rufous tinge; apical margin fringed with silvery pubescence, third segment black, apical segments adorned with pale golden pubescence; lateral sutures fringed with silvery pile; under side dark ferruginous. Length 8.5–9 mm.

Hab.—Mexico. Prof. F. Sumichrast.

Sphærophthalma xalisco Blake.

Female.—Head round, not as wide as thorax, clothed with bright golden pubescence; scape of antennæ and mandibles rufous, tips of the latter black; eyes round, large, prominent; thorax short, subovate, closely reticulate, mesothorax black, metathorax clothed with bright golden pubescence, roundly truncate behind; legs rufo-piceous, clothed with scattered glittering hairs, intermediate and posterior tibiæ armed with spines, calcaria white; abdomen ovate, basal segment clothed with silvery pubescence on its apical margin, second segment black, having a broad band of fine, golden pubescence, slightly contracted at the middle, third with a small central patch of pale pubescence, following segments similarly clothed; under side dark chestnut brown, irregularly punctured. Length 5.5–6.5 mm.

Hab.—Mexico. Prof. F. Sumichrast.

Sphærophthalma Ulkei Cresson.

Female.—Head large, broader than the thorax, black, densely and coarsely, punctured, with a very fine, appressed, silvery pile, glittering in certain lights and a sparse, erect, black pubescence; on the clypeus the pubescence is long dense and tinged with reddish; eyes small, rounded, entire and convex; mandibles black, red at base; antennæ piceous, the flagellum sericeous, the scape clothed with a silvery pubescence; thorax broad and truncate in front, narrowed behind, covered with dense, large punctures, and clothed with a sparse, erect, black pubescence; disk of metathorax rounded off with a central patch of silvery cinereous pubescence, the posterior face flattened and strongly tinged with reddish; sides of the thorax with a very dense, fine, appressed, silvery cinereous pile, especially in the excavations; legs piceous black, with a long, thin, cinereous pubescence; posterior tibiæ and tarsi rufous, the former with a double row of long blackish spines; tips of tarsal joints spinose and blackish; abdomen ovate, ferruginous, densely and coarsely punctured, the large basal segment tinged with honey yellow, especially above; the whole abdomen has above a sparse, rather long, erect, blackish pubescence; beneath, the pubescence is cinereous and very dense on the apical segments; above, the apical margin of the small basal segment a subobsolete patch on the basal middle of the large basal segment, extending narrowly to the apex, and a patch on middle of the remaining segments, all of silvery cinereous pubescence; the node moderate, of nearly equal width, much depressed, tinged with fuscous, and a rather large, obtuse tubercle on each side at base. Length 12 mm.

Hab.—Cape St. Lucas, Lower California.

Sphærophthalma nigriceps Cresson.

Female.—Head black, clothed with dense, black pubescence, that about the mouth, as well as the mandibles and palpi, piceous; antennæ piceous, basal joint long and slightly curved, second small and subglobose, third three times as long as the second and widened at tip, the nine following joints subequal, each shorter than the third, slightly involute, compressed and widened in the middle and narrowed towards the tip, which is pointed; thorax broader in front, rufous, covered with large, deep, rough, confluent punctures and clothed with long, erect, ochraceous pubescence, that on the anterior margin black and rather dense; on each side behind the middle two rather large, obtuse tubercles, the posterior ones placed on the lateral base of the metathorax, which is narrowed towards the tip, convex and gradually sloped behind, the sides abrupt and densely pubescent; legs piceous black, densely clothed with ochraceous pubescence, very long on the femora; the tibiæ with a row of long, acute, black spines; abdomen ovate, convex; first segment small, campanulate, black, densely clothed with long and short ochraceous pubescence; second segment large, rufous, roughly and confluently punctured, the basal half above with a large black mark, densely clothed with black pubescence, with the posterior margin lobed on the middle, rest of the segment clothed with short ochraceous pubescence, and on the apical margin a band of dense ochraceous pubescence, sometimes with a transverse patch of black pubescence on each side of the middle; third segment densely clothed with ochraceous pubescence, with a slight mixture of black on the basal middle; remaining segments densely clothed with black pubescence. Length 12–15 mm. (Cresson.)

Hab.—Cuba.

Sphærophthalma 4-guttata Say.

Female.—Head rounded, as wide as the thorax, ferruginous, finely punctured, clothed with appressed reddish golden pubescence, thinly interspersed with erect, fuscous hairs; antennæ: scape testaceous, finely punctured, clothed with reddish golden pubescence, flagellum fuscous; base of mandibles testaceous, tips black; head beneath clothed with long pale hairs; eyes round, prominent and polished; thorax ovate, narrowed posteriorly, ferruginous; closely punctured and clothed with appressed reddish golden pubescence; metathorax abruptly truncate and having on each side a small, rounded, polished tubercle, and three minute, transverse, elevated ridges on the disc; lateral excavations smooth, shining; legs ferruginous, clothed with pale glittering hairs; knees and tarsi fuscous, intermediate and posterior tibiæ armed exteriorly with spines; abdomen ovate, basal segment rufous, or rufo-fuscous, thinly clothed with erect pale hairs; second segment black, closely and finely punctured, clothed with fine, appressed, black pubescence, and having two large, ovate, fulvous spots before the apical margin and two of the same color, but smaller, at the basal margin, remaining segments black, having the apical margins fringed with pale yellowish pubescence; ventral surface of second segment testaceous. Length 9–14 mm.

Hab.—Texas.

In some specimens the basal abdominal segment is black, and without the two fulvous spots at basal margin of second segment.

Sphærophthalma frigida Smith.

Female.—Ferruginous, closely punctured; head subquadrate, wider than the thorax: the flagellum, except the three basal segments, the eyes and tips of the mandibles fuscous; thorax oblong quadrate, very slightly narrowed posteriorly, the tibiæ and femora fuscous; their base, the tarsi and coxæ pale ferruginous; abdomen: the four apical segments and the apical margins of the two basal ones rufo-piceous, the marginal band on the second segment produced into an angular shape in the middle; the margins of the four apical segments ciliated with cinereous hairs. Length 4.5 mm. (Smith.)

Hab.—Arctic America (the Great Bear Lake).

Sphærophthalma cypris Blake.

Female.—Dark ferruginous; head round, as wide as the thorax, closely punctured, mandibles and antennæ black; eyes round, convex; thorax elongate ovate, closely covered with confluent punctures, slightly constricted behind the middle, with a small tubercle in the constriction; metathorax roundly truncate; legs testaceous, knees black, thinly clothed with pale hairs, intermediate and posterior tibiæ armed with long spines; abdomen elongate ovate, basal segment fringed with pale golden pubescence; second segment covered closely with elongate punctures and having four small honey yellow maculæ, two at the base, the others placed a little before the apical margin, which is fringed with pale golden pubescence; apical segments blackish, clothed with appressed pale golden hairs; ventral segments same as above. Length 11–14 mm.

Hab.—Georgia.

Sphærophthalma ferrugata Fab.

Female.—Ferruginous; head round, not as wide as thorax, finely punctured, clothed with fine, appressed, glittering, ferruginous pubescence; antennæ fuscous

or testaceous; eyes large, round, polished; base of mandibles ferruginous, tips; black; thorax elongate ovate, narrowed posteriorly, closely punctured and clothed with appressed ferruginous pubescence; pro- and mesothorax having on each side a small ovate tubercle; metathorax truncate, and having on the disc a slight transverse ridge; legs blackish, clothed with glittering white hairs, intermediate and posterior tibiæ armed exteriorly with strong spines; abdomen ovate, basal segment small, testaceous, apically margined with black; second segment finely punctured, clothed with fine appressed ferruginous pubescence, and having a small, rounded, testaceous spot at the basal margin, its apical margin black; apical segments fringed with pale glittering pubescence; ventral surface shining, finely punctured; apical margins clothed as above, but less densely. Length 7–13 mm.

Hab.—United States.

This is a very variable and abundant species; in some individuals the legs are ferruginous, and without the dark spot on the second abdominal segment, while in some instances there are indications of small lateral spots, and occasionally the disc of the thorax and abdomen beneath is testaceous. Its geographical range is quite extended, being found from Maine to Texas, and westward to California.

It resembles *S. simillima* Smith, but is recognized by the more elongate thorax, which is narrowed behind, and the smaller head; the head in *simillima* being broad and quadrate.

Sphærohpthalma vesta Cresson.

Female.—Rufous, densely and rather roughly punctured; head and thorax clothed with a sparse, glittering, ochraceous pubescence, but very dense on the apical segments of the abdomen; head not wider than the thorax, the vertex with a few scattered, long, blackish hairs, the pubescence about the mouth long, dense and glittering ochraceous; eyes small, rounded, entire and convex; mandibles piceous; antennæ piceous, the basal joint with a short ochraceous pubescence; thorax rather short, truncate in front, narrowed behind the middle and slightly strangulated, rounded above and behind, but abrupt on the sides, the metathorax is rather abruptly rounded and excavated on each side; the thorax above has a long, scattered, erect, blackish pubescence, and a short, appressed, reddish pile, having a beautiful golden-red hue when viewed in certain lights; sides of the thorax have a thin, fine, pale pubescence, more dense in excavations; legs black, or piceous black, clothed with a glittering ochraceous pubescence; in some specimens the coxæ and femora are more or less tinged with dull rufous; abdomen ovate, rather less coarsely punctured than the thorax; the node and the large basal segment, except their apical margins, rufous; the remaining segments blackish, all the segments above and beneath have an apical fringe of long, dense, glittering ochraceous pubescence; the large basal segment above and beneath has a short, scattered, ochraceous pubescence, occasionally with a rounded patch of short, black pubescence on the basal middle above; sometimes the apex of this segment is broadly black, and sometimes the segment is divided down the middle by a blackish line. Length 8.5–11 mm.

Sphærophthalma albopilosa Blake.

Female.—Ferruginous; head subquadrate, posterior angles rounded, closely and finely punctured; eyes small, round; antennæ fusco-ferruginous; mandibles tipped with black; thorax subquadrate, narrowed behind, densely punctured, metathorax abruptly truncate; legs castaneous, clothed with glittering white hairs; abdomen ovate, second segment densely and finely punctured, apical segments blackish, fringed with whitish pubescence; under side paler than above; entire insect clothed with erect white hairs. Length 8.5 mm.

Hab.—Texas. (Belfrage) One specimen.

This species closely resembles some individuals of *ferrugata*, but may be readily distinguished by the rather dense, white, erect pubescence.

Sphærophthalma caneo Blake.

Female.—Ferruginous; head round, not as wide as thorax, clothed with cinereous pubescence; eyes large, round, prominent; scape of antennæ with whitish hairs; thorax ovate, narrowed posteriorly, thinly covered with griseous hairs, metathorax obliquely truncate; legs thinly clothed with glittering whitish hairs; abdomen ovate, finely punctured, thinly covered with erect white hairs; apical margin of second segment fuscous at middle, fringes of segments white. Length 8 mm.

Hab.—Texas.

Allied to *ferrugata* Fab.

Sphærophthalma mutata Blake.

Female.—Ferruginous; head rounded, transverse, finely and densely punctured, mandibles blackish at tip; antennæ nigro-fuscous; eyes small, round, convex; thorax robust, ovate, slightly narrowed posteriorly, coarsely punctured, armed at the sides with two obtuse tubercles, metathorax roundly truncate; legs black, thinly clothed with pale glittering hairs; abdomen ovate, second segment with four pale ferruginous spots, two at base small, those at apical margin larger; the remaining segments fusco-ferruginous, the apical margins fringed with pale yellowish or white pubescence. Length 8.5–13 mm.

Hab.—Atlantic and Southern States.

Upon the examination of a large series of specimens this may prove to be only a variety of *ferrugata*. It is distinguished by the more or less distinct pale spots on the second abdominal segment; thorax is rather shorter and broader, and the color of the apical fringe of the segments varies precisely as in *ferrugata*.

Sphærophthalma scævola Blake.

Female.—Ferruginous; head subquadrate, posterior angles rounded, slightly wider than the thorax, finely punctured, thinly clothed with appressed reddish golden pubescence; antennæ fuscous, mandibles blackish at tips; eyes round, prominent; thorax ovate, much narrowed posteriorly, closely punctured; sides of metathorax smooth; legs blackish, thinly clothed with pale glittering hairs, sides of metathorax smooth; legs blackish, thinly clothed with pale glittering

hairs, calcaria whitish; abdomen ovate, the second segment having on the disc near apical margin two large subquadrate patches of pale ferruginous and occasionally two small spots of the same color at basal margin; apical margins of all the segments fuscous, third, fourth and fifth fringed with pale silky pubescence. Length 6.5–9 mm.

Hab.—Atlantic States.

This is very near to *mutata*, from which it differs by its much smaller size, by the second abdominal segment having generally only two large, subquadrate, or ovate, pale, ferruginous spots, and by the thorax being slightly longer and narrower posteriorly.

Sphærophthalma balteola Blake.

Female.—Ferruginous; head rounded, closely covered with confluent punctures, mandibles blackish at tips; antennæ fuscous; eyes small, round, polished; thorax elongate ovate, narrowed posteriorly, sides armed with two small tubercles, sparsely clothed with short pale hairs; legs fuscous, or blackish, thinly clothed with pale hairs; abdomen elongate ovate, the basal segment clothed on middle of disc and apical margin with pale pubescence, second segment closely and finely punctured, the posterior margin stained with darker color and fringed with white pubescence, remaining segments blackish, clothed with black hairs, apex with pale pubescence; under side paler. Length 6.5–11 mm.

Hab.—Atlantic States, Texas.

This species varies considerably in size. Easily recognized by the continuous pure white fringe at apical margin of second abdominal segment.

DIVISION II.

First abdominal segment gradually dilated to apex, as represented by figures 15 and 16.

Fig. 15.

Fig. 16.

Sphærophthalma propinqua Cresson.

Male.—Black, closely punctured, somewhat shining, clothed with black pubescence; vertex tinged with rufo-piceous and clothed with golden pubescence; eyes small, round, entire and convex; antennæ black, subsericeous; thorax black, with black pubescence; the prothorax above, the mesothorax and scutellum rufous, clothed with long golden pubescence; metathorax black, rounded behind, with large, coarse punctures and sparse black pubescence; tegulæ black, punctured; wings dark fuscous, paler about the middle; marginal cell large, rather

long, rounded or somewhat pointed at tip, and exceeding the tip of the third submarginal cell; three distinct submarginal cells, the first nearly as long as the marginal; the second broad beneath, much narrowed towards the marginal and receiving the first recurrent nervure about the middle; the third submarginal distinctly defined, short, pointed at tip and much narrowed beneath and receiving the second recurrent nervure; legs black, or piceous black, the femora beneath fringed with long grayish pubescence, the tibiæ and tarsi with blackish pubescence; abdomen ovate, black, closely punctured, the large basal segment shining, clothed with a very thin, black pubescence; apical margins of all the segments, both above and beneath, fringed with long golden pubescence Length 9 mm.; expanse of wings 16 mm. (Cresson.)

Hab.—Colorado.

A very distinct species, easily recognized by the red thorax, with its golden pubescence, as well as of the apical margins of the abdominal segments. It is closely allied to *S. fulvohirta*, but quite distinct by the coloration of the thorax and by the different shape of the marginal and submarginal cells of the anterior wings.

Sphærophthalma occola Blake.

Male.—Black; head rounded, narrower than the thorax, densely and finely punctured, thinly clothed with black pubescence; antennæ black; eyes round and prominent; thorax robust, subquadrate, narrowed posteriorly, densely and finely punctured, clothed with scattered black hairs; metathorax rounded, coarsely reticulated; tegulæ ovate, very finely reticulated; wings fuliginous, marginal cell elongate ovate, rounded at tip, first submarginal nearly as large as the marginal, narrowed towards the base, second subtriangular, its basal nervure sinuate, and receiving the first recurrent at the middle, third narrowed beneath, indistinctly defined; legs black, the intermediate and posterior tibiæ and tarsi clothed with pale brownish pubescence, calcaria pale; abdomen ovate, basal segment black, shining, punctured, bearing a few black hairs, second segment ferruginous, shining, finely and remotely punctured, interspersed with short ferruginous hairs, its apical margin and following segments black, densely clothed with black pubescence; under side of second segment darker than above. Length 11 mm.; expanse of wings 17 mm.

Hab.—Florida, Southern States. Collection of Mr. Norton.

This may prove to be the male of *S. dubitata*, Smith.

Sphærophthalma Sanbornii Blake.

Male.—Head black, rounded, closely punctured, thinly clothed with erect black hairs; eyes round, convex, polished; antennæ black; thorax elongate subquadrate, rounded in front, closely punctured, sparsely clothed with black hairs, metathorax roundly truncate, coarsely reticulate; tegulæ convex, very finely punctured; wings pale fuliginous, slightly paler towards base, marginal cell ovate lanceolate, rounded at tip; first submarginal large, narrow; second subtriangular, receiving the first recurrent at middle, its basal nervure sinuate, third pentagonal, with abbreviated nervures from its exterior angles; legs black, thinly clothed with black and white hairs, femora minutely punctured, calcaria white; abdomen ferruginous, basal segment campanulate, closely punctured, punctures

finer at apical margin, which is fuscous, and fringed with dark hairs; second segment closely punctured, thinly clothed with glittering white hairs, apical margins fuscous, thinly fringed with black hairs, third and fourth segments somewhat darker, finely punctured, apex black. Length 7 mm.; expanse of wings 12 mm.

Hab.—Massachusetts. Collection of Prof. Agassiz.

This may prove to be the male of *S. simillima* Smith.

Sphærophthalma flavida Blake.

Male.—Head and thorax black, the former subquadrate, posterior angles rounded, closely punctured, vertex thinly clothed with pale yellowish hairs; eyes round, prominent; thorax closely punctured; prothorax, sides and scutellum clothed with pale hairs, metathorax roundly truncate, closely reticulate; tegulæ ovate, closely punctured; wings pale fuscous, faintly iridescent, marginal cell elongate ovate, rounded at tip; first submarginal long and narrow; second subtriangular, obliquely narrowed towards base, its basal nervure sinuate, receiving the first recurrent at middle, third narrowed beneath, receiving the second recurrent at middle, its apical nervure faintly defined; legs black, thinly clothed with pale hairs, calcaria pale; abdomen elongate ovate, basal segment campanulate, fuscous, finely punctured, the apical margin fringed with golden pubescence; second segment, except base and apical margins, which are fuscous, bright yellow, finely punctured, the punctures more dense at sides, remaining segments black, margined with fuscous, finely punctured, fringed with orange-yellow pubescence; under side of abdomen blackish brown, finely punctured. Length 11 mm.; expanse of wings 16 mm.

Hab.—Texas.

Sphærophthalma laticeps Blake.

Male.—Black; head quadrate, wider than the thorax, posterior margin concave, angles acute, very finely punctured, clothed with scattered white hairs; antennæ and mandibles black, the latter clothed with fine white hairs; eyes round; thorax elongate quadrate, pro- and mesothorax finely punctured, metathorax reticulated, rounded; wings subhyaline, iridescent, submarginal cell ovate lanceolate, first submarginal, bisected by a white line, second receiving the first recurrent nervure a little before the middle; tegulæ round, polished; legs black, clothed with white hairs, calcaria white; abdomen ovate, shining, first segment campanulate, with a small tubercle on each side near the base, second segment with remote, minute punctures bearing a few scattered silvery hairs; apical segments thinly fringed with the same; under side of entire insect clothed with scattered hairs. Length 6.5 mm.; expanse of wings 12 mm.

Hab.—Mexico. Prof. F. Sumichrast.

Sphærophthalma grandiceps Blake.

Male.—Bright ferruginous; head subquadrate, nearly three times as wide as the thorax, hind margin deeply concave, posterior angles produced into acute teeth, finely and closely punctured, cheeks armed posteriorly beneath with a long acute spine; mandibles long, bidentate at the tips, which are blackish; antennæ: scape and two basal joints of flagellum pale ferruginous, remaining joints fuscous; eyes small, round; thorax elongate subquadrate, feebly narrowed

at middle, prothorax with a small tubercle on each side, metathorax roundly truncate; wings only rudimentary; legs castaneous, thinly clothed with whitish hairs, calcaria white; abdomen elongate ovate, sessile, stained with castaneous, closely and finely punctured, thinly clothed with silvery hairs. Length 6.5 mm.

Female.—Bright ferruginous; head nearly as large in proportion to the thorax as that of the male; thorax robust, subquadrate, minutely punctured, sides deeply excavate; legs castaneous, thinly clothed with glittering hairs, posterior tibiæ armed with spines; abdomen above stained with castaneous, thinly clothed with silvery pubescence. Length 5.5 mm.

Hab.—Texas. Two specimens (♂ ♀).

A very curious little species; in structure allied to *laticeps* Blake.

Sphærophthalma xalapa Blake.

Male.—Black; head rounded, thinly clothed with erect pale hairs; antennæ black; eyes round, prominent; thorax elongate ovate, prothorax rounded in front, finely punctured, posterior margin carinate, bearing a few erect, pale hairs; mesothorax finely punctured; metathorax roundly truncate; coarsely reticulate; wings pale fuliginous, paler towards the base; marginal cell ovate, roundly truncate at tip, second submarginal receiving the recurrent nervure a little beyond the middle, a faint hyaline streak running through the first and second submarginal cells; tegulæ round, finely punctured; legs black, clothed with pale glittering hairs, calcaria white; abdomen elongate ovate, shining, finely punctured, apical margins of all the segments ciliated with silvery pubescence; under side of entire insect sprinkled with pale hairs. Length 9 mm.; expanse of wings 15 mm.

Hab.—Mexico. Prof. F. Sumichrast.

Sphærophthalma zapoteca Blake.

Male.—Black; head subquadrate, posterior angles rounded, closely punctured, thinly clothed with yellowish white hairs; antennæ black; eyes moderate, convex, rounded; mesothorax elevated, coarsely punctured; metathorax rounded and posteriorly truncate, coarsely punctured; wings subhyaline, with an iridescent lustre, marginal cell moderately long, rounded at tip, three submarginal cells, first about as large as the marginal, the second subtriangular, receiving the first recurrent nervure about the middle, the third obsoletely defined and not extending beyond the marginal; legs black, tibiæ clothed with long, pale, glittering hairs; abdomen ovate, basal segment subsessile with the second, both of which are polished, moderately punctured and thinly clothed with erect, pale golden yellow hairs; apical segments clothed with dense, pale golden pubescence. Length 7 mm.; expanse of wings 11 mm.

Hab.—Mexico. Prof. F. Sumichrast.

Sphærophthalma gila Blake.

Male.—Black; entire insect closely punctured; head subquadrate, posterior angles rounded; mouth clothed with pale pubescence; eyes round; thorax elongate ovate, metathorax roundly truncate, finely reticulate; wings ample, hyaline, iridescent, marginal cell elongate ovate, pointed to tip, first submarginal nearly as long as the marginal, second subtriangular, pointed towards base, receiving the recurrent nervure before the middle; nervures fuscous; legs black, thinly

clothed with pale hairs; abdomen ovate, the segments fringed with glittering white hairs; entire insect sprinkled with pale pubescence. Length 3.5 mm.; expanse of wings 6.5 mm.

Hab.—Texas. Belfrage.

Sphærophthalma Robinsonii Blake.

Female.—Black; head quadrate, double the width of thorax, posterior angles produced into acute spines, densely punctured, vertex clothed with dense, bright, deep golden pubescence; cheeks prominent, finely punctured, thinly clothed with pale glittering hairs; on the cheeks below the eyes are two small bilobed tubercles ferruginous in front, just beneath which there is a stout tooth on each side projecting behind, ferruginous at tip; below these are two others much larger, projecting beneath, black, shining, finely punctured and clothed at base with pale glittering hairs: mandibles stout, with a tooth about one-third of their length from the tips, a bright ferruginous dash before the tooth; antennæ black, the scape thinly clothed with pale glittering pubescence; eyes prominent, round, polished; thorax subquadrate, slightly constricted, reticulate; anterior angles armed with a small tooth; disc clothed with bright golden pubescence, except a rounded black patch on mesothorax and a longitudinal patch of the same color on the metathorax, which is abruptly truncate; legs black, clothed with pale glittering hairs, the intermediate and posterior tibiæ armed exteriorly with a row of spines; tarsal joints fringed with ferruginous hairs, calcaria pale, ferruginous; extremity of anterior tibiæ and first joint of tarsi deeply emarginate, with the spur lanceolate; abdomen ovate, basal segment broad at its apical margin, clothed with pale golden pubescence, second segment finely punctured, clothed with dense black pubescence and bearing two large quadrant-shaped fulvous patches, the third and following segments fringed with pale golden pubescence; under side of entire insect thinly clothed with pale hairs. Length 18 mm.

Hab.—Mexico (Prof. F. Sumichrast). Five specimens.

In some specimens the basal joint of abdomen is entirely black.

This species is nearly allied to *capitata* Smith, but is readily distinguished by the shape of the thorax and the greater width of the head in proportion to the thorax, as well as the large tooth behind the mandibles.

Sphærophthalma capitata Smith.

Female.—Black; head quadrate, wider than the thorax, densely clothed with pale golden pubescence, the cheeks furnished with a stout tooth; the apical joints of the flagellum ferruginous beneath; the mandibles ferruginous, their apex black; thorax short, broad and narrowed posteriorly, rounded in front, suddenly contracted, on each side a short tooth before the contraction; the metathorax truncate, the disc covered with pale golden pubescence, having in front a large, rounded, black patch; the legs thinly covered with pale golden pubescence, the calcaria and apical joints of the tarsi pale ferruginous, the intermediate and posterior tibiæ armed exteriorly with a row of spines; abdomen: the second segment having a large, transverse, yellow macula clothed with golden pubescence.

the macula deeply emarginate anteriorly and posteriorly, narrowest towards the base of the segment and slightly emarginate at the sides, the posterior angles rounded; the third and following segments covered with very pale golden pubescence, the fourth having a central patch of black pubescence; beneath, the margins of the segments ciliated with silvery pubescence. Length 17 mm.

Hab.—Mexico.

Sphærophthalma quadridens Blake.

Female.—Black; head quadrate, double the width of thorax, posterior angles acute, face densely rugose, vertex clothed with pale golden pubescence, cheeks prominent, deeply punctured, bearing beneath two strong spines, curved forward, in front of these, behind the mandibles, are two shorter ones, head below clothed with long glittering hairs; mandibles black, polished, stout, with two teeth before the apex; antennæ black, scape clothed with long, pale, golden pubescence, flagellum dark ferruginous in front; eyes moderately prominent, rounded; thorax subquadrate, slightly constricted, rugose, prothorax with a stout tubercle on each side posteriorly, disc of mesothorax clothed with pale golden pubescence; metathorax roundly truncate, flanks polished, very thinly sericeous; legs black, polished, clothed with long glittering hairs, the intermediate and posterior tibiæ armed exteriorly with a row of spines, calcaria long, black; abdomen ovate, basal segment nodose, second segment having an ovate spot of deep golden pubescence on the disc, apical margins of segments thinly fringed with long pale hairs; under side shining, punctured, thinly clothed with pale glittering hairs. Length 19 mm.

Hab.—Panama (H. Strecker). This species is allied to *Robinsonii* and *capitata*, but is readily distinguished from the former by the ovate spot on second abdominal segment, and from the latter by the size of the head.

Sphærophthalma Gabbii Blake.

Female.—Black; head subquadrate, as wide as thorax, posterior angles rounded, densely rugose, sparsely clothed with erect black hairs; above the eyes on vertex are two ovate spots of appressed pale golden pubescence, cheeks prominent, coarsely, confluently punctured; mandibles black, mouth clothed with pale yellowish hairs; scape of antennæ clothed with pale golden pubescence, flagellum slightly pruinose; eyes prominent, round, polished; thorax subquadrate, narrowed posteriorly, densely rugose, anterior angles of prothorax armed with a short tooth; disc of mesothorax bearing a transverse band of pale golden pubescence, anterior angles produced into acute teeth, flanks deeply excavate, filled with pale pubescence below, above which they are polished; metathorax roundly truncate, with an obtuse tooth on each side anteriorly, disc having on each side an elongate ovate stripe of pale golden pubescence; legs clothed with pale yellowish hairs, calcaria pale; abdomen elongate ovate, basal segment having two lateral patches of pale golden pubescence, second finely rugose, the dorsal surface bearing numerous, minute, longitudinal, parallel carinæ; on the disc are two round, yellow spots and two lateral stripes, thinly clothed with pale golden pubescence; apical segments black at middle, sides clothed with golden pubescence; under side black, second segment moderately coarsely punctured with a lateral oblique stripe, and apical margins of all the segments clothed with silvery pubescence; anterior margins of all finely aciculate. Length 18 mm.

Hab.—Costa Rica. Two specimens; collected by the late W. M. Gabb.

Sphærophthalma electra Blake.

Female.—Head black, subquadrate, posterior angles rounded, closely punctured, vertex clothed with reddish golden pubescence; eyes round, prominent; scape of antennæ castaneous, flagellum piceous; mandibles ferruginous at base, black at tips; thorax ovate, narrowed posteriorly, bright ferruginous, finely punctured, thinly clothed with reddish golden pubescence, bearing on each side two small tubercles; metathorax coarsely rugose on disc, abruptly truncate; legs black, thinly clothed with glittering white hairs; abdomen ovate, entirely black above, closely and minutely punctured, thinly clothed with black pubescence; under side closely and finely punctured, clothed with silvery pubescence, the margins of the second, third and fourth segments fringed with silvery pubescence, apex black. Length 9-13 mm.

Hab.—Texas. Two specimens.

Very distinct by the abdomen being entirely black above and clothed with silvery pubescence beneath.

Sphærophthalma lerma Blake.

Female.—Head subquadrate, wider than the thorax, posterior angles rounded, cheeks produced into an acute tooth, dark ferruginous, vertex thinly clothed with scattered golden pile, interspersed with a few erect hairs; face, scape of antennæ and mandibles rufous, the latter black at tips; eyes round, prominent; thorax finely reticulated, subovate, contracted behind the mesothorax, which, with the anterior angles, is armed at the sides with a stout tooth, metathorax gradually rounded posteriorly, with a row of small teeth on each side; lateral declivities polished; legs rufous, clothed with glittering hairs, intermediate and posterior tibiæ armed with spines; abdomen ovate, very finely punctured, dark chestnut brown, second segment having a broad band of appressed, bright golden pubescence, posteriorly emarginate, apical margin nearly black; the remaining segments thinly clothed with bright golden pubescence; under side paler than above, finely punctured, shining. Length 6.5 mm.

Hab.—Mexico. Prof. F. Sumichrast.

Allied to *denticulata* Smith, but may be distinguished from that species by the cheeks being spined, and the absence of the abdominal tubercles.

Sphærophthalma canadensis Blake.

Female.—Fusco-testaceous; head subquadrate, wider than the thorax, posterior angles acute, finely punctured; face fuscous; antennæ and mandibles pale rufous, tips of the latter black; eyes black, round, polished; thorax short, quadrate, anterior angles acute, sides crenulated, densely and finely punctured, metathorax roundly truncate; legs rufo-testaceous, thinly clothed with pale glittering hairs, calcaria white; abdomen ovate, second segment finely punctured, clouded towards the base with dark stains, apical margin and remaining segments dark fuscous, thinly clothed with pale golden pubescence. Length 5.5 mm.

Hab.—Canada.

Sphærophthalma bisignata Blake.

Female.—Head subquadrate, wider than the thorax, posterior angles not rounded, vertex and face clothed with pale golden pubescence, posterior margin black, cheeks prominent, clothed with silvery hairs; antennæ black; eyes round, polished; thorax short, suddenly narrowed behind, clothed with pale golden pubescence, mesothorax with triangular, granulate, black patch, metathorax abruptly truncate; legs rufo-piceous, clothed with pale glittering hairs; abdomen ovate, basal segment black, second segment with a large subquadrate black patch on the disc, surrounded by an emarginate band of golden pubescence, enclosing two small lateral black spots; apical margin clothed with dense black pubescence, remaining segments fringed with silvery pubescence; ventral segments thinly clothed with long pale hairs. Length 11 mm.

Hab.—Mexico. Prof. F. Sumichrast.

Sphærophthalma connectens Cresson.

Female.—Ferruginous or fusco-ferruginous, closely and rather finely punctured; head large, quadrate, wider than the thorax, clothed with a short, dense, golden sericeous pubescence; eyes small, round, entire and convex; apical half of mandibles black; antennæ ferruginous, dusky towards the apex; thorax short, subquadrate, broad and slightly rounded in front, somewhat strangulated about the middle and abrupt and truncate behind, the lateral margins serrate; upper surface blackish, with fuscous pubescence; a patch on each side of the metathorax above, as well as most of its posterior face, with a short golden sericeous pubescence; the lateral excavation very large, rather deep, smooth and polished; legs ferruginous, with yellowish pubescence; abdomen ovate, broad at base, rather densely clothed with short, appressed, golden sericeous pubescence, paler on the apical segments; on the basal middle of the second segment above a large rounded, fuscous spot extending a short distance on the apical margin of the first segment, and on the apical middle of the second segment another large dark fuscous spot, rather transverse, and connected with the basal spot by a short, narrow, fuscous line down the middle of the segment; both spots are clothed with fuscous pubescence, that on the apical spot darkest; apical segments above and beneath densely clothed with golden sericeous pubescence. Length 9-11 mm. (Cresson.)

Hab.—Cape St. Lucas, Lower California.

Sphærophthalma ferruginea Smith.

Female.—Ferruginous, rugose; the head wider than the thorax, subquadrate, the hinder angles acute, the posterior margin nearly straight, densely covered above with pale golden colored pubescence, that on the cheeks is thin and silvery white; thorax oblong, pyriform, with a thin, short, pale golden pubescence, and, as well as the head, thinly sprinkled with erect pale hairs; the legs with thin pale pubescence; the intermediate and posterior tibiæ with black spines; the first segment of the abdomen small and with a spot of silvery white pubescence; the second segment with a subovate patch of black pubescence in the middle towards the basal margin, its apical margin with black pubescence; the third, fourth and fifth segments with silvery white pubescence in the middle, that at the side of the apical segment being black; beneath the segments are fringed with white. Length 13 mm. (Smith.)

Hab.—Mexico, Orizaba.

Sphærophthalma contumax Cresson.

Female.—Obscure rufous, very densely and somewhat coarsely punctured; head very large, quadrate, broader than the thorax and densely clothed with a silvery ochraceous pubescence; eyes small, round, entire, convex and polished; mandibles black at tips: antennæ entirely ferruginous; thorax short, subquadrate, broad and truncate in front, strangulated behind the middle, declivious on the sides and behind; upper surface with a sparse blackish pubescence; on the lateral margins and behind with long, scattered, ochraceous pubescence; the deep lateral posterior excavation large, smooth and polished; legs pale rufous, thinly clothed with ochraceous pubescence; abdomen ovate, rather broad at base, the large basal segment clothed above with a very short, appressed, golden sericeous pubescence, on the basal third a large, quadrate, pale fuscous, central spot, and another smaller one on each side, all connected at base by a narrow transverse band, the apex with a broad transverse band of the same color; the remaining segments above and beneath with a dense fringe of long silvery ochraceous or cinereous pubescence; the node, or small basal segment is shaped like that of *S. montivaga*, but less broad, its apical margin is pale fuscous. Length 11 mm. (Cresson.)

Hab.—Colorado.

This pretty species is easily recognized by the large ochraceous head and the ornamentation of the large basal segment of the abdomen. It has a close ally in *S. connectens* Cresson, from Lower California, which differs principally by the second segment of the abdomen having two large fuscous spots, one on the basal middle and the other on the apical middle, both connected by a short, narrow, fuscous line.

Sphærophthalma gothica Blake.

Female.—Head and thorax dark ferruginous, densely and finely reticulated, thinly clothed with pale golden pubescence, interspersed with blackish hairs; head slightly wider than the thorax, quadrate posterior angles rounded, hind margin blackish; antennæ: scape and first joint of flagellum ferruginous, mandibles black at tip; eyes large, round, polished; thorax quadrate, metathorax abruptly truncate, coarsely reticulated, lateral declivities concave, polished; legs ferruginous, thinly clothed with pale glittering hairs, intermediate and posterior tibiæ armed externally with spines, calcaria pale; abdomen ovate, basal segment ferruginous, darker towards the apical margin, which is fringed with pale golden pubescence; second segment pale fulvous, having on the disc an elongate quadrate black patch extending from the apical margin to the base, where it terminates in a point, on each side of which there is an ovate spot of the same color near the anterior margin; apical segments blackish, clothed with pale golden pubescence; under side of entire insect ferruginous. Length 8.5 mm.

Hab.—Mexico. Prof. F. Sumichrast.

Sphærophthalma iznear Blake.

Female.—Head and thorax ferruginous, the former quadrate, posterior angles acute, wider than the thorax, finely reticulate; scape of antennæ and mandibles rufous, tips of the latter black; eyes round; thorax short, subquadrate, rounded in front, slightly constricted at the sides, which are finely dentate, metathorax abruptly truncate, coarsely reticulate; legs rufo-testaceous, with a few glittering hairs, intermediate and posterior tibiæ armed with spines, calcaria white; abdomen ovate, second segment with a broad band of pale golden pile on the apical margin, having a semicircular notch on its anterior edge, apical segments fringed with pale golden pubescence; under side dark rufous, inclining to black at the base. Length 6.5 mm.

Hab.—Mexico. Prof. F. Sumichrast.

Sphærophthalma chiapa Blake.

Female.—Head and thorax ferruginous, closely and finely punctured, the former quadrate, posterior angles acute, wider than the thorax; antennæ: scape and first joint of flagellum rufous, mandibles black at tips; eyes round, polished; thorax short, subquadrate, rounded in front, slightly constricted at sides, metathorax abruptly truncate; legs pale rufous, thinly clothed with whitish hairs, intermediate and posterior tibiæ armed with long spines, calcaria pale; abdomen ovate, black; apical margin of basal segment fringed with pale golden pubescence, second segment having a lunate band of pale golden pubescence, connected with the anterior margin by two longitudinal lines of the same; apical segments fringed with pale golden pubescence; ventral segments same as above. Length 7 mm.

Hab.—Mexico. Prof. F. Sumichrast.

Sphærophthalma cruciata Smith.

Female.—Head and thorax ferruginous, the former quadrate, the posterior angles acute; the cheeks produced into an obtuse spine; the posterior margin of the vertex and the sides of the head fuscous; the vertex more or less adorned with silvery pile; the antennæ rufo-fuscous; thorax fiddle-shaped, the lateral margins denticulate; legs rufo-testaceous, differing in depth of coloring; abdomen: the base more or less rufo-testaceous, a central narrow line of silvery pubescence runs from base to apex, a transverse fascia crosses the second segment a little within the apical margin. Length 6.5 mm.

Hab.—Brazil (Para), Mexico.

The specimens from Mexico have the central and transverse lines of pale golden pubescence.

Sphærophthalma salutatrix Smith.

Female.—Black, with the thorax and legs ferruginous, the antennæ and mandibles obscurely so; head much wider than the thorax, subquadrate, the posterior angles acute, with golden yellow pubescence above and a black, semicircular spot on the vertex anteriorly; thorax narrowed behind, constricted about the middle, the margins with a series of compressed teeth, closely and strongly punctured above; abdomen, with the margin of the first segment, a triangular spot at the

base of the second, from which a narrow line emanates and unites with a broad fascia near the apical margin of the same segment of bright golden colored pubescence; from the transverse fascia a line of similar pubescence runs longitudinally to the apex. Length 6.5–8.5 mm. (Smith.)

Hab.—Mexico, Orizaba.

Sphærophthalma petricola Blake.

Female.—Head quadrate, wider than the thorax, finely punctured, having a thin scattered pubescence; antennæ: scape and first joint of flagellum ferruginous, remaining joints piceous; mandibles ferruginous, tips black; eyes round, polished; thorax short, closely punctured, constricted before the metathorax, which is abruptly truncate, sides deeply impressed, shining; legs pale ferruginous, thinly clothed with shining hairs, intermediate and posterior tibiæ armed with spines, calcaria white; abdomen ovate, basal segment fringed with golden pubescence, second segment dark chestnut brown, having a transverse band of golden pubescence before the apical margin, remaining segments ferruginous, fringed with pale golden hairs; under side paler than above, shining. Length 6.5 mm.

Hab.—Mexico. Prof. F. Sumichrast.

Sphærophthalma præclara n. sp.

Female.—Ferruginous; head transversely subquadrate, wider than the thorax, posterior angles subacute, clothed with appressed, glittering, pale, golden pubescence; antennæ and mandibles ferruginous, tips of the latter black; eyes round, polished; thorax short, abruptly narrowed behind the middle and obliquely truncate, posteriorly dark ferruginous, finely rugose; prothorax thinly clothed with erect, blackish hairs, metathorax with pale hairs; legs pale ferruginous, thinly clothed with pale glittering hairs; intermediate and posterior tibiæ armed with spines; abdomen ovate, basal segment small, sessile with the second, its apical margin at middle testaceous, second segment ferruginous, sparsely clothed with short, pale golden pubescence, its apical margin and remaining segments blackish, third and fourth segments fringed with silvery pubescence; ventral surface finely and remotely punctured, the pubescence longer than above. Length 8 mm.

Hab.—Arizona.

Allied to *S. cruciata* Smith, but may be readily separated by the abdomen being ferruginous, whereas in that species it is black.

Sphærophthalma auripes Blake.

Female.—Head rounded, finely punctured, dark ferruginous, vertex and cheeks thinly clothed with fine, pale, golden pubescence; antennæ: scape and first joint of flagellum ferruginous, remaining joints piceous; mandibles dark ferruginous, tips black; eyes round, prominent; thorax coarsely reticulate, rounded in front, constricted before the metathorax, which is abruptly truncate, dark ferruginous, sides of metathorax deeply impressed, shining; legs ferruginous, clothed with scattered, glittering hairs; knees black, intermediate and posterior tibiæ armed with a row of spines; tarsi clothed with pale golden pubescence; abdomen ovate, dark ferruginous, closely punctured, basal segment small, the apical margin on the disc clothed with golden pubescence, second segment with a fascia of golden

pubescence, interrupted at the middle, apical margin black; the remaining segments fringed with golden pubescence; under side finely punctured, shining, paler than above. Length 6.5 mm.

Hab.—Mexico. Prof. F. Sumichrast.

Sphærophthalma minutissima Blake.

Female.—Head quadrate, wider than the thorax, posterior angles acute, fuscous, thinly clothed with pale glittering pubescence; face, scape of antennæ and mandibles ferruginous; eyes round, prominent; thorax ovate, dark ferruginous, clothed with erect dark hairs, metathorax roundly truncate, sides denticulate; legs fuscous, clothed with pale hairs, intermediate and posterior tibiæ armed with spines; abdomen ovate, basal segment ferruginous, second segment fuscous, having on the disc a transverse, posteriorly emarginate band of fine glittering pubescence; apical segments clothed with pale pubescence. Length 3 mm.

Hab.—Mexico. Prof. F. Sumichrast.

Sphærophthalma pygmea Blake.

Female.—Ferruginous; head round, wide as thorax, moderately coarsely punctured; antennæ honey yellow, scape clothed with yellowish pubescence; tips of mandibles blackish; thorax subovate, narrowed posteriorly, densely punctured, sparsely clothed with erect white hairs; legs honey yellow, clothed with pubescence of the same color; abdomen elongate ovate, closely punctured, thinly clothed with long, erect, whitish hairs; apical margins of segments above fringed with white pubescence. Length 4.5-7 mm.

Hab.—Texas, Colorado, Nevada. Four specimens.

Sphærophthalma virgnnenia n. sp.

Female.—Head rounded, not as wide as thorax, ferruginous, covered with coarse, confluent punctures; antennæ fusco-ferruginous; eyes round and prominent; thorax robust, ovate, narrowed posteriorly, ferruginous, confluently punctured, thinly clothed with short, erect, pale hairs, a small lateral notch behind the mesothorax; metathorax obliquely truncate; legs castaneous, thinly clothed with pale hairs, the tarsi somewhat paler; abdomen ovate, black, finely and closely punctured, sparsely clothed with erect white hairs; apical margins of all the segments fringed with white pubescence. Length 5.5 mm.

Hab.—New Mexico.

Sphærophthalma psammadroma Blake.

Female.—Head black, somewhat wider than the thorax, quadrate, posterior angles acute; face, scape of antennæ and mandibles ferruginous, tips of the latter black; eyes large, round, prominent; vertex and posterior margin nearly black, clothed with scattered golden pile; thorax short, sharply constricted at middle, sides crenulated, ferruginous; legs pale ferruginous, thinly clothed with glittering hairs, intermediate and posterior tibiæ armed with spines, calcaria white; abdomen ovate, black, basal segment margined with golden pubescence, second segment with two small fuscous spots at the base and two ovate spots clothed with pale golden pile near the apical margin, which is adorned in the same manner; apical segments fringed with pale golden pubescence; under side pale rufous, shining, finely punctured. Length 5.5–6.5 mm.

Hab.—Mexico. Prof. F. Sumichrast.

Sphærophthalma similliima Smith.

Female.—Ferruginous, closely covered with strong, elongate punctures, those on the abdomen running into striæ; the eyes, tips of mandibles and the flagellum black; the legs fuscous; the thorax rounded in front, narrowed posteriorly, the sides crenulated, the lateral margins of the metathorax crenulated; abdomen: the apical margins of the segments fuscous, those of the first and second fringed with black pubescence, the four apical margins fringed with cinereous pubescence. Length 7–14 mm. (Smith.)

Hab.—Massachusetts.

This species is very like the *S. ferrugata* of Fabricius, but is easily distinguished by its coarse sculpture, and by having the base of the abdomen broad, whereas in *S. ferrugata* it is much narrowed at the base. This species varies greatly in size.

Sphærophthalma brazoria Blake.

Female.—Head subquadrate, posterior angles rounded, closely reticulated; face and cheeks black, vertex dark chestnut brown, thinly clothed with short, erect, black hairs; antennæ blackish brown; eyes round, prominent; thorax quadrate, coarsely reticulated, slightly constricted at middle, the disc dark ferruginous, with scattered, erect, black hairs; metathorax abruptly truncate; legs black, clothed with scattered pale hairs, intermediate and posterior tibiæ armed with a row of spines; abdomen ovate, basal segment reticulated, clothed with black, its apical margin fringed with bright ferruginous pubescence, second segment very finely punctured, ferruginous, densely clothed with pubescence of the same color, interspersed with silvery hairs; the remaining segments black, fringed with pale golden pubescence; under side closely punctured, lateral carinæ distinct, ventral segments fringed with mixed black and white hairs. Length 9 mm.

Hab.—Texas.

Allied to *S. waco*.

Sphærophthalma montivaga Cresson.

Female.—Rufous, or rufo-ferruginous, brighter above, which is clothed with a short, dense, appressed, silky red pubescence, very densely but not coarsely punctured; beneath more or less tinged with fuscous, with a silky ochraceous pubescence; head large, quadrate, a little broader than the thorax, the vertex has a few scattered, long, blackish, erect hairs, the cheeks and mouth more or less tinged with fuscous; eyes small, rounded, entire, convex and polished; mandibles also polished and black at tips; antennæ reddish at base, the scape with ochraceous pubescence; the flagellum rufo-piceous; thorax short, very broad and truncate in front, subcordate, being deeply strangulated on each side behind the middle, the apex truncate and very abrupt; upper surface red, or ferruginous; the sides, under surface and metathorax behind often more or less fuscous, sometimes almost black; lateral excavation deep, smooth and polished; posterior face of the metathorax slightly concave, finely sculptured, sometimes shining; sides of thorax and summit of metathorax sometimes with a long, erect, fuscous pubescence; legs black, sometimes more or less piceous, clothed with a glittering ochraceous pubescence, longer and more dense on the coxæ and femora beneath; abdomen large, ovate, broad at base, gradually narrowed towards the apex; large

basal segment above clothed with a short, dense, appressed, reddish pubescence; remaining segments above and beneath fringed with a long, dense, pale, ochraceous, or cinereous pubescence, which also covers the large ventral segment; the apical segments above and the venter entirely is often more or less fuscous; the node is very broad, being nearly as broad as the base of the second segment, flattened, sometimes black, with black pubescence, mixed on the sides with ochraceous. Length 8.5–13 mm. (Cresson.)

Hab.—Colorado.

The node of the abdomen in this species is differently shaped from that of any of the preceding species, being as broad as the base of the large second segment, whereas in all others it is rather small and narrow.

Sphærophthalma luxuriosa Smith.

Female.—Black; the legs ferruginous, adorned with bright golden yellow pubescent marking; head large, wider than the thorax and subquadrate, above covered with golden colored pubescence; the antennæ obscurely ferruginous; thorax slightly narrowed behind, above with golden pubescence; the truncation of the metathorax and a subtriangular space in front black, the coxæ and tips of the femora and tibiæ black; abdomen with the basal segment black; the second with golden pubescence, a semicircular spot at its basal margin in the middle, a somewhat angular one on each side and its apical margin with a broad fascia that is widest in the middle, black; the following segments with pale golden yellow pubescence. Length 12.5 mm. (Smith.)

Hab.—Mexico.

Sphærophthalma vulpina Smith.

Female.—Black and densely pubescent; the head with long, suberect, yellowish white pubescence; the thorax covered with similar pubescence and having an ovate tuft of black on the disc; the abdomen with a large, semicircular, black pubescent space at the base, then a broad band of yellowish white followed by one of black, the apex being whitish, except the apical segment, which is black. Length 14 mm. (Smith.)

Hab.—Mexico, Oajaca.

Sphærophthalma derilicta Smith.

Female.—Head, antennæ, legs and abdomen black; thorax ferruginous; head and thorax rugose, the former the same width as the latter, which is elongate, with the lateral margins nearly parallel, being very slightly narrowed in the middle and rounded anteriorly and posteriorly; the legs with a thin, pale pubescence; the spines at the apex of the tibiæ and also those at the apex of the joints of the tarsi pale ferruginous; the apical margin of the basal segment of the abdomen, a large oblong patch on each side of the second segment at its base, a broad fascia on its apical margin and the following segments covered laterally with yellowish white pubescence. Length 13 mm. (Smith.)

Hab.—Central America.

Sphærophthalma melancholica Smith.

Female.—Black, with the thorax more or less obscurely red above and with black and white pubescence; the thorax and abdomen rugose, the former biden-

tate on each side; the metathorax clothed with long white pubescence, as well as the intermediate and posterior legs; the basal segment of the abdomen, the apical margin of the second segment and the third entirely with long white pubescence; the second segment with a large black tuft; the apical segments entirely clothed with black pubescence. Length 11-16 mm. (Smith.)

Hab.—St. Domingo.

Sphærophthalma araneoides Smith.

Female.—Black; the vertex and a semicircular spot on the thorax in front of bright rufo-fulvous pubescence; the head and thorax beneath with white pubescence; a spot on each side of the metathorax, two ovate ones on the second segment of the abdomen, a narrow fascia on its apical margin, the third segment and the fourth laterally covered with bright, pale, yellowish white pubescence; the rest of the thorax and abdomen with black pubescence; the legs have a bright pale pubescence, the posterior femora with black pubescence at their apex. Length 13 mm. (Smith.)

Hab.—Nicaragua, St. Juan del Sur.

Sphærophthalma macrocephala Smith.

Female.—Clothed with ferruginous pubescence; head and abdomen obscure, ferruginous; thorax black; head wider than the thorax, subquadrate, the cheeks armed with a sharp spine; the thorax short, narrowed behind; the metathorax with black pubescence. Length 14 mm. (Smith.)

Hab.—Orizaba.

Sphærophthalma munifica Smith.

Female.—Black, with rusty golden spots; head narrower than the thorax and covered above with rusty golden pubescence; beneath, and also on the thorax and abdomen beneath, the pubescence is pale yellowish white; thorax with black pubescence in front and with rusty golden behind, the latter partly covering the sides of the truncation, which is black in the middle; the legs with a whitish pubescence; abdomen with black pubescence and with two ovate, deep, ochraceous maculæ at the base of the second segment and two larger ones towards its apical margin; the maculæ with rusty golden pubescence; the fourth and fifth segments with ochraceous pubescence in the middle. Length 9-15 mm. (Smith.)

Hab.—Mexico.

Sphærophthalma ducalis Smith.

Female.—Black, clothed with black pubescence; the head above and a broad transverse band on the thorax, which curves slightly backwards, of bright gold colored pubescence; the second segment of the abdomen ferruginous above, and having at its base a large, subovate, black pubescent macula; also smaller ovate maculæ placed laterally about the middle of the segment, the apical margin of the segment and also the third segment black; the black bands not usually extending to the lateral margins, which have silvery white pubescence, similar to that which clothes the thorax beneath and fringes the segments of the abdomen; the fourth, fifth and sixth segments have golden colored pubescence above, the fifth with more or less of black laterally. Length 15-20 mm. (Smith.)

Hab.—Orizaba.

Sphærophthalma separata Smith.

Female.—Head and abdomen black; thorax and legs ferruginous; the head a little wider than the thorax, slightly narrowed and rounded behind; the thorax somewhat fiddle-shaped and finely rugose; legs obscurely ferruginous; abdomen with a sharp carina in the middle from the base to the apex of the second segment; the margin of the basal segment and an elongate angular spot at the base of the second segment of silvery white pubescence; the second segment with two ovate, pubescent, pale yellow maculæ; the following segments with white pubescence. Length 6.5–8.5 mm. (Smith.)

Hab.—Mexico, Orizaba.

Sphærophthalma blandina Smith.

Female.—Ferruginous; the head and thorax finely rugose; the flagellum of the antennæ and the tips of the mandibles black; the head wider than the thorax and subquadrate; the latter fiddle-shaped, its margins crenulated; the apical margin of the basal segment of the abdomen, and the middle of the basal margin of the second with bright golden colored pubescence, with two ovate spots of the same color near the apical margin of the second segment; the apical margins of the rest of the segments with bright golden pubescence; a black spot between the ovate maculæ. Length 6.5–7 mm. (Smith.)

Hab.—Mexico, Orizaba.

Genus 4, **PHOTOPSIS** Blake.

Body unicolorous, smooth and shining; head transverse; eyes large, round and prominent; ocelli large; antennæ long and slender; basal joint of anterior tarsus deeply emarginate; thorax narrowed posteriorly; wings hyaline, sometimes slightly clouded, stigma prominent; abdomen sparsely clothed with pubescence, basal segment more or less petiolate, apex of male furnished with two minute recurved spines. Female unknown.

The species may be tabulated as follows:

Abdomen petiolate.

Wings with two submarginal cells.

Wings yellow, with fuscous spot on posterior margin..... **mendica.**

Wings subhyaline, fuliginous spot on posterior margin..... **orizaba.**

Head black, thorax honey yellow, first abdominal segment rufo-testaceous, wings ample..... **nokomis.**

Second abdominal segment coarsely punctured; anterior wing bifasciate, with dusky on apical half..... **danaus.**

Abdomen with pale yellowish pubescence; wings faintly yellowish; anterior pair with dusky spot on anterior margin.. **unicolor.**

Wings varied at apex with dusky spots; apical segments of abdomen blackish, with long white pubescence..... **clara.**

Abdomen slender; head scarcely wider than thorax; legs pale, tips of femora blackish..... **melicausa.**

Abdomen slender; wings with an apical fuscous cloud..... **mellipes.**

First segment of abdomen elongate pyriform; wings with a distinct fuscous cloud before the apex..... **Belfragei.**

Head narrowed behind the eyes, vertex rugose..**triangularis.**

Wings with a faint fuscous cloud apically, stigma lying almost entirely within the marginal cell..... **attenuata.**

Wings fuscous, first abdominal segment subpyriform..... **ferruginea.**

Wings with a distinct fuscous cloud beyond the marginal cell; abdomen slender, petiole and second abdominal segment coarsely punctured..... **melanicepa.**

Moderately robust, dark honey yellow; wings hyaline, marginal cell ovate lanceolate, pointed to tip, stigma fuscous..... **concolor.**

Wings with three submarginal cells.

Head, thorax and first abdominal segment black, with pale pubescence; mesothorax and abdomen ferruginous, with golden pubescence, anterior wing broadly fuliginous at apex..... **imperialis.**

Head rounded, as wide as the thorax, both with ferruginous pubescence, third submarginal cell narrowed beneath, its outer nervure nearly obsolete..... **contracta.**

Second submarginal cell receiving both recurrent nervures, the third small and quadrate..... **nubecula.**

Wings extending beyond the apex of abdomen, hyaline, stigma very large..... **ampla.**

Wings yellowish hyaline, second submarginal cell very small, triangular, stigma large..... **nitida.**

Large; body pale castaneous; head entirely black; posterior femora blackish..... **alcanor.**

Black, shining; wings hyaline, stigma black..... **atrata.**

Wings faintly clouded apically, stigma fuscous, third submarginal cell small and quadrate..... **albipes.**

Wings hyaline, second submarginal small, triangular, stigma large, fuscous; body shining..... **sobrinus.**

Large; body smooth and shining; wings yellowish hyaline, stigma fuscous, first submarginal cell as large as the second and third combined..... **lepidus.**

Abdomen with the first and second abdominal segments more or less sessile.

Wings with two submarginal cells.

Abdomen robust, head broader than thorax, femora blackish..... **tapajos.**

Robust; abdomen with long, pale pubescence; wings hyaline, immaculate, nervures honey yellow..... **venustus.**

Wings hyaline, stigma and nervures pale honey yellow..... **juxta.**

Head subquadrate, posterior angles rounded; wings yellowish hyaline, stigma fuscous, small..... **aulus.**

Head round, as wide as the thorax; thorax black, clothed on disc with coarse fulvous pubescence; wings yellowish hyaline, clouded about the middle and apex..... **rustica.**

Head and thorax dark honey yellow, the former subquadrate; wings yellowish hyaline, marginal cell ovate..... **bicolor.**

Robust; fusco-ferruginous; wings yellowish hyaline, first submarginal cell small and narrow.....**astyanax.**

Robust, uniform honey yellow; wings yellowish hyaline, the marginal cell broadly ovate.....**inconspicuus.**

Head round, wings hyaline, stigma large, pale fuscous, lying almost within the marginal cell.....**minuta.**

Wings with three submarginal cells.

Ferruginous; head round, not as wide as thorax; wings yellowish hyaline, marginal cell ovate, lanceolate, truncate at tip, third submarginal cell narrowed beneath, its outer nervure nearly obsolete.....**uro.**

Third submarginal cell narrow, transversely elongate quadrate, color dark castaneous, with pale pubescence; antennæ and legs paler; apex of first abdominal segment nearly as broad as the base of the second.....**castanea.**

Medium; head black, clypeus and mandibles dull honey yellow, concolorous with body; legs paler.....**glabrella.**

Second abdominal segment immaculate.....**hyalina.**

Robust, apical segments of abdomen clothed with yellow pubescence; wings yellowish, more or less faintly clouded, stigma pale honey yellow.....**nebulosus.**

Dark honey yellow, shining, apical segments of abdomen polished, pale honey yellow basally, apically margined with fuscous; marginal cell broadly ovate, stigma fuscous..**abdominalis.**

Bright honey yellow, second abdominal segment with lateral black line.....**pallida.**

DIVISION I.

Abdomen more or less petiolate, as in figs. 17 and 18; wings with two submarginal cells.

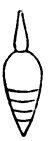


Fig. 17.

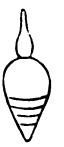


Fig. 18.

Photopsis mendica Blake.

Male.—Uniform brown-black; head round, densely punctured, thinly clothed with scattered, long, yellowish white hairs; eyes round, polished, prominent; mouth clothed with yellowish hairs; antennæ rufo-fuscous, as long as the head and thorax; thorax ovate, narrowed posteriorly, closely punctured, clothed with yellowish white hairs; sides, metathorax and scutellum reticulate, the latter finely; tegulæ convex, polished; wings ample, yellowish hyaline, paler about the apex; marginal cell elongate ovate, rounded at tip, first submarginal elongate subquadrate, pointed towards base; second short, obliquely subquadrate, its basal nervure sinuate; third obsolete; costal cell moderately wide, stigma honey yel-

low, nervures yellowish; a round fuscous cloud beneath the cells; legs blackish, thinly clothed with long, pale, yellowish pubescence; abdomen elongate ovate, basal segment campanulate, finely punctured, second segment shining, minutely and remotely punctured, sparsely clothed with yellowish white hairs, apical margins of all the segments fringed with long, coarse, yellowish white pubescence; apex armed with two long, acute, recurved spines. Length 11–14 mm.; expanse of wings 21–25.5 mm.

Hab.—Nevada. Collection of Mr. Norton.

Photopsis orizaba Blake.

Male.—Black; head round, as wide as the thorax, finely punctured, thinly clothed with erect yellowish hairs; eyes very large, round, convex; ocelli prominent; antennæ piceous, as long as the head and thorax; thorax: pro- and mesothorax coarsely punctured, the latter with two longitudinal impressed lines on the disc and two short ones near the tegulæ; metathorax rounded, coarsely reticulate, with three short, sharp, longitudinal carinæ not extending to the middle; tegulæ round, convex, polished; wings ample, yellowish hyaline, marginal cell elongate ovate, first submarginal long and narrow, second subquadrate, pointed towards the base, receiving the first recurrent nervure before the middle and having a faint fuscous cloud divided by a longitudinal transparent line; a large fuscous cloud in the discoidal region; apex slightly clouded; legs black, femora clothed with long scattered hairs, tibiæ and tarsi with yellowish pubescence; abdomen elongate ovate, petiolate, petiole segment one-third the length of entire abdomen, shining, feebly punctured, thinly clothed with erect hairs, second segment polished, having a few very minute punctures, interspersed with scattered hairs; lateral carinæ distinct, clothed above and beneath with dense white pubescence; apical margins of the segments clothed with long yellowish pubescence; under side polished, having a few scattered hairs. Length 13 mm.; expanse of wings 21 mm.

Hab.—Mexico.

Photopsis nokomis Blake.

Male.—Head black, shining, punctures very minute and bearing a few scattered, erect, yellowish hairs; eyes large, round, convex; ocelli prominent; antennæ and mandibles dull rufo-fuscous, tips of the latter black; thorax honey yellow, shining, closely punctured, disc of mesothorax with two longitudinal impressed lines; metathorax rounded, coarsely reticulate, the disc having three short longitudinal carinæ not reaching the middle; wings ample, hyaline, marginal cell elongate ovate, pointed at tip, first submarginal long and narrow, second elongate subquadrate, its basal and apical nervures sinuate, receiving the recurrent nervure before the middle; stigma prominent, fuscous, its apical half within the marginal cell; legs fusco-piceous, thinly clothed with pale hairs; abdomen elongate ovate, petiolate, petiole pyriform, rufo-testaceous, paler at base, closely punctured and sparsely clothed with erect hairs; second segment black, polished, finely and remotely punctured, interspersed with long, scattered, pale hairs; remaining segments black; apical margins ciliated with glittering yellow pubescence; under side dark fuscous, apex armed with two minute, acute, recurved spines. Length 11 mm.; expanse of wings 17 mm.

Hab.—Arizona.

In some specimens the head is honey yellow.

Photopsis danaus Blake.

Male.—Dark honey yellow, thinly clothed with erect white hairs; head round, finely punctured; eyes round, large, prominent; antennæ fuscous; thorax elongate subquadrate, rounded in front, closely punctured, disc of mesothorax with two longitudinal impressed lines, scutellum rounded, finely reticulate; metathorax roundly truncate, coarsely reticulate; tegulæ convex; wings hyaline, faintly iridescent, marginal cell elongate ovate, second submarginal obliquely subquadrate, pointed towards base, its basal nervure sinuate, receiving the recurrent nervure before the middle; nervures fuscous, a pale fuscous cloud extending from the stigma and gradually widening to the first apical cell; three faint streaks of the same at apex; legs fuscous, paler towards the joints, femora finely punctured, thinly clothed with white hairs, calcaria pale; abdomen ovate, petiolate, petiole coarsely reticulate, second segment closely punctured, apical segments fringed with whitish pubescence; under side same as above. Length 9 mm.; expanse of wings 16 mm.

Hab.—Texas.

A variety has the basal segment more elongate.

This species closely resembles *P. clara* Cresson, but may be easily distinguished by the transverse fuscous cloud in the wings and the coarse puncturing of the abdomen.

Photopsis unicolor Cresson.

Male.—Uniform pale honey yellow; head rather large, polished, with fine, scattered punctures, and long, thin, yellowish hairs; eyes very large and prominent, slightly emarginate behind; ocelli also large; face much depressed beneath the antennæ; tips of mandibles black; antennæ not quite as long as the head and thorax, luteous yellow, the flagellum opaque; thorax densely and deeply punctured, clothed with a long, thin, yellowish pubescence; mesothorax with four longitudinal impressed lines, the lateral one abbreviated before; metathorax rounded above, rather abrupt on the sides and behind, coarsely reticulated and clothed with a long, thin, whitish pubescence; wings large, yellowish hyaline, slightly varied with pale fuscous, the largest and darkest mark being on the posterior margin beneath the stigma; nervures yellowish, stigma fulvous; marginal cell moderately long, the lower nervure gradually curved to the apex, which is somewhat pointed; two submarginal cells, the first narrow and elongate, the second rather large and subquadrate, receiving the first recurrent nervure before the middle, the basal nervure angular; legs color of the body, tibiæ and tarsi paler, clothed with whitish pubescence; abdomen elongate ovate, petiolate, smooth and polished, pointed at tip, clothed with bright yellow pubescence, rather sparse on the second segment and dense and rather long on the apical segments, which are tinged with yellow; the first or petiole segment elongate, slender at base and dilated towards the tip; the pubescence on the two basal segments whitish. Length 12-15 mm.; expanse of wings 18-23.5 mm.

Hab.—California. (Baron R. Osten Sacken) Two specimens.

This is closely allied to *P. concolor*, and which differs from this species by the darker color, by the hyaline wings, and by the pubescence more sparse and entirely whitish; the pubescence of the present species is of a beautiful golden yellow, except on the metathorax, legs and base of the abdomen, where it is whitish.

Photopsis clara Cresson.

Male.—Uniformly honey yellow, polished, clothed with a long, thin, whitish pubescence; eyes rather large, rounded, entire, very convex and blackish; ocelli large, enclosed by a blackish spot; tips of mandibles also blackish; antennæ as long, or rather longer than the head and thorax, brownish, honey yellow at base; thorax densely punctured; mesothorax polished, with a few scattered punctures and two deeply impressed longitudinal lines; metathorax abruptly rounded behind, coarsely reticulate, with a broad, smooth, shining space on the middle, bounded on the sides and divided down the middle by three sharply defined longitudinal carinæ; tegulæ honey yellow; wings ample, hyaline, faintly tinged with yellowish, with three elongate, longitudinal, pale, fuscous streaks on the apical margin and a large, pale, fuscous spot beneath the second submarginal cell; nervures pale testaceous; stigma rather large and blackish; marginal cell short, rounded at tip; two distinct submarginal cells, the second obliquely subquadrate, receiving the first recurrent nervure before the middle, the basal nervure sinuate; third submarginal obliterated; legs slender, thinly clothed with pale pubescence; coxæ and trochanters honey yellow; femora and tibiæ, except extreme base and apex, blackish, rest of the legs yellowish testaceous; abdomen petiolated, smooth and polished; the node or petiole segment elongate, slender at base and much swollen at tips, and clothed with a long, thin, whitish pubescence; large basal segment highly polished, naked, except its apical margin, which has a long, dense fringe of whitish pubescence; remaining segments fuscous, densely clothed with a long, whitish pubescence, more sparse beneath. Length 8.5 mm.; expanse of wings 16 mm.

Hab.—Colorado.

Photopsis melicauza Blake.

Male.—Uniform dark honey yellow; thinly clothed with erect yellowish hairs; head rounded, shining, finely punctured; eyes large, round and prominent, as well as the ocelli; antennæ pale fuscous, except the scape, which is pale honey yellow; tips of mandibles black; thorax: pro- and mesothorax closely punctured, the latter with two short, feebly impressed longitudinal lines; metathorax rounded, coarsely reticulate; tegulæ ovate; wings moderate, hyaline, marginal cell sublanceolate, first submarginal long, narrow and subparallel, second subquadrate, narrowed towards the base, its apical nervure sinuate and receiving the first recurrent before the middle, third obsolete; stigma lanceolate, dark brown; a faint streaked fuscous cloud in the discoidal region; legs pale yellow, except the apices of the femora and tibiæ, which are pale fuscous, thinly clothed with pale hairs; abdomen elongate ovate, petiolate, smooth, shining, thinly clothed with erect, pale, yellowish hairs, petiole as long as the second segment, moderately punctured, the latter having a few very minute scattered punctures; lateral carinæ distinct, apical margin fringed with fine, white pubescence, the remaining segments margined with long, thin, yellowish hairs; ventral segments same as above; apex armed with two long, acute, recurved spines. Length 11 mm.; expanse of wings 17 mm.

Hab.—Texas. Mr. Belfrage.

Photopsis mellipes n. sp.

Male.—Uniform dark honey yellow; head transversely rounded, wider than the thorax, minutely punctured and bearing a few scattered, pale, glittering

hairs, base of mandibles pale honey yellow, tips castaneous, clothed with glittering pubescence, clypeus round; eyes large, round, prominent; antennæ: scape pale honey yellow, clothed with yellow sericeous pubescence, flagellum yellowish fuscous; thorax elongate ovate, slightly narrowed posteriorly, pro- and mesothorax closely punctured, metathorax obliquely truncate, coarsely and confluently punctured; wings hyaline, with a faint fuscous cloud before the apex, two submarginal cells, the marginal cell sublunate, roundly truncate at tip, first submarginal large, elongate subquadrate, second small, subconical, pointed towards the base and receiving the recurrent nervure near the base; stigma large, occupying the greater part of the marginal cell; tegulæ small, pale honey yellow; legs uniformly pale honey yellow, thinly clothed with glittering hairs; abdomen elongate ovate, petiolate, petiole long, pyriform, closely covered with confluent punctures, second segment finely punctured. third segment with a narrow, transverse, castaneous band on disc at middle, apical margins of the fifth and sixth segments fringed with pale pubescence, entire abdomen thinly clothed with erect glittering white hairs, ventral surface same as above. Length 10 mm.; expanse of wings 14 mm.

Hab.—Arizona.

Photopsis Belfragei Blake.

Male.—Uniform fuscous, shining, thinly clothed with erect whitish hairs; head rounded, as wide as the thorax, very finely punctured; eyes very large, round, prominent, as well as the ocelli; antennæ luteous, as long as the head and thorax; tips of the mandibles black; thorax elongate, subparallel, rounded in front, pro- and mesothorax very finely punctured, metathorax roundly truncate, coarsely reticulated; tegulæ small, honey yellow; wings hyaline, faintly iridescent, having a large fuscous cloud just beyond the marginal cell, darker towards the base; marginal cell short, rounded at tip, two distinct submarginal cells, the second subtriangular, narrowed towards the base and receiving the two recurrent nervures; stigma as long as the marginal cell, which encloses three-fourths of it, pale yellow; nervures hyaline; legs pale yellow, except the femora, which are fuscous, clothed with scattered long hairs; trochanters broadly dilated; abdomen elongate ovate, coarsely punctured, first or petiole segment more than one-third the length of entire abdomen, its apical half suddenly enlarged and ovate, third segment nearly black; segments fringed with pale hairs, the apex armed with an acute, recurved spine. Length 13 mm.; expanse of wings 18 mm.

Hab.—Texas.

This species is closely allied to *P. nubecula* Cresson, but is readily distinguished by having two submarginal cells and the sudden dilatation of the basal segment of the abdomen.

Photopsis triangularis Blake.

Male.—Uniform dark honey yellow; head small, subtriangular, closely punctured; eyes large, prominent; tips of mandibles black; antennæ flavo-fuscous; thorax ovate, narrowed posteriorly, mesothorax with two longitudinal impressed lines, coarsely punctured; scutellum rounded, finely punctured; metathorax coarsely reticulate; wings yellowish hyaline, marginal cell ovate lanceolate, first submarginal long and narrow, second subtriangular, its basal nervure arcuate, receiving the first recurrent near the base; stigma small, fuscous; legs rufo-fus-

cous about the joints, thinly clothed with scattered pale hairs; abdomen elongate ovate, petiolate; basal segment subpyriform, second segment shining, minutely and remotely punctured, bearing a few scattered, long, pale hairs; remaining segments fringed with long, pale pubescence; apex fuscous. Length 9 mm.; expanse of wings 17 mm.

Hab.—Nevada. Collection of Mr. Norton.

This species is easily recognized by the triangular head.

Photopsis attenuata Blake.

Male.—Uniform dark honey yellow; head round, shining; eyes large, prominent; antennæ honey yellow; thorax elongate ovate, shining, finely punctured, disc of mesothorax elevated, sides closely punctured, metathorax closely and finely reticulate, gradually roundly truncate; wings moderate, hyaline, with a faint fuscous cloud in the apical region, marginal cell ovate, truncate at tip, first submarginal large, second very small, subtriangular, receiving the second recurrent nervure before the middle; stigma large, yellowish, lying almost wholly within the marginal cell; tegulæ minute, pale honey yellow; legs pale honey yellow, thinly clothed with concolorous hairs; abdomen elongate, petiolate, petiole one-third the length of the entire abdomen, pyriform, densely punctured, second segment finely punctured, third castaneous; entire insect sprinkled with erect whitish hairs. Length 4.5 mm.; expanse of wings 11 mm.

Hab.—Texas. Belfrage.

Photopsis ferruginea Blake.

Male.—Uniform ferruginous; head not as wide as thorax, finely punctured; eyes large, prominent; tips and upper edges of mandibles blackish; flagellum of antennæ fuscous, slightly pruinose; thorax ovate, narrowed posteriorly, mesothorax with two longitudinal, parallel, impressed lines; scutellum rounded, closely punctured, metathorax coarsely reticulate, flanks punctured; wings fuscous, marginal cell ovate lanceolate, first submarginal small, narrow, second subquadrate, receiving the first recurrent about the middle, stigma small, fusco-ferruginous; tegulæ polished, dark honey yellow; legs thinly clothed with scattered hairs; abdomen elongate ovate, petiolate, shining, thinly clothed with erect pale hairs; basal segment subpyriform, second minutely and remotely punctured. Length 11 mm.

Hab.—Nevada.

Photopsis melanicceps n. sp.

Male.—Head black, shining, transversely rounded, narrowed posteriorly, as wide as the thorax and bearing a few erect, glittering white hairs, minutely punctured; eyes and ocelli large and prominent; scape of antennæ pale honey yellow, flagellum slightly darker; face beneath the antennæ honey yellow; tips of mandibles blackish; thorax ovate, dark honey yellow; pro- and mesothorax finely punctured, thinly clothed with erect pale hairs, metathorax roundly truncate, coarsely and confluently punctured; wings hyaline, with a small fuscous cloud beyond the marginal cell, which is narrow and roundly truncate at tip, two submarginal cells, the first long and pointed at base, the second elongate subtriangular, its outer nervure sinuate and receiving both recurrent nervures, the first at the base and the second a little before the middle; stigma pale honey yellow and lying three-fourths within the marginal cell; tegulæ small, pale honey yel-

low; legs honey yellow, clothed with long pale hairs; abdomen dark honey yellow, elongate ovate, petiolate, thinly clothed with erect, pale yellowish hairs; petiole pyriform, much narrowed at base, coarsely punctured, second segment coarsely and deeply punctured, polished; apex somewhat more densely clothed. Length 12 mm.; expanse of wings 18 mm.

Hab.—Arizona.

This species is allied to *P. albipes* Cresson, but is easily separated by the black head.

Subdivision I.

Wings with three submarginal cells.

Photopsis imperialis Blake.

Male.—Head black, rounded, finely punctured, thinly clothed with scattered whitish hairs; eyes round, polished, prominent; antennæ piceous, as long as the head and thorax; thorax ovate, dark ferruginous above, closely punctured, disc of mesothorax with two longitudinal impressed lines, scutellum blackish, finely punctured, metathorax roundly truncate, coarsely reticulate, dorsal groove not extending to the middle, sides coarsely punctured; wings ample, basal half hyaline, apical half pale fuscous, marginal cell elongate ovate, three submarginal cells, first narrow, second obliquely subquadrate, pointed towards base, its basal and apical nervures sinuate, receiving the first recurrent before the middle, third narrowed beneath, so that its apical nervure is opposite to and joins the second recurrent; legs black, thinly clothed with silvery hairs, calcaria reddish; abdomen ovate, petiolate, basal segment pyriform, coarsely punctured, thinly clothed with erect silvery hairs; second and following segments brownish, finely punctured, the apical margins clothed with reddish golden pubescence; under side same as above. Length 13 mm.; expanse of wings 23.5 mm.

Hab.—Texas.

Photopsis contracta Blake.

Male.—Uniform bright ferruginous, thinly clothed with erect hairs; head rounded, as wide as thorax; eyes round, prominent; flagellum of antennæ slightly pruinose; upper edges and tips of mandibles blackish; thorax ovate, rounded posteriorly, minutely punctured, mesothorax with two faintly impressed lines, scutellum rounded, metathorax abruptly truncate, reticulate; wings fuscous, marginal cell short, ovate, first submarginal long, narrow, second subtriangular, its apical nervure sinuate and receiving the first recurrent near the middle, stigma small, fuscous; tegulæ dark honey yellow; legs thinly clothed with scattered hairs; abdomen ovate petiolate, short, shining; apical margin of petiole blackish, margins of remaining segments fringed with ferruginous pubescence. Length 9 mm.

Hab.—Nevada.

Photopsis concolor Cresson.

Male.—Uniform honey yellow, polished, clothed with a thin, long, whitish pubescence; eyes large, round, entire and prominent, as well as the ocelli, which are enclosed by a blackish spot; antennæ long, honey yellow, the flagellum

above dusky; thorax rather closely punctured; the suture between the pro- and mesothorax deeply impressed; scutellum subdepressed, rugose, with a transverse excavation at base; metathorax rounded, coarsely reticulated, with a double shining space at base enclosed by well defined carinæ; tegulæ luteous; wings ample, obscure hyaline; nervures testaceous, stigma fuscous; marginal cell elongate, regular, pointed at tip; two submarginal cells, shaped as in *P. clara*; third submarginal cell obliterated; legs luteous, with long, whitish pubescence; the four posterior femora and tibiæ, except extreme base and apex, more or less blackish; abdomen elongate, petiolated, oblong ovate, smooth and shining, clothed with a long, thin, whitish pubescence, very sparse on the disk of the large basal segment, but rather dense on the apical margins of all the segments above and beneath; the first or petiole segment elongate, rather slender at base and swollen beyond the middle, with a small prominence on each side about the middle. Length 9–11 mm.; expanse of wings 17–18 mm. (Cresson.)

Hab.—Colorado.

Allied to *P. clara*, but easily distinguished by the hyaline wings.

Photopsis nubecula Cresson.

Male.—Uniform dull honey yellow, shining, thinly clothed with a rather long whitish pubescence; eyes large, round, entire and very prominent, as well as the ocelli; tips of mandibles black; antennæ longer than the head and thorax, luteous yellow; thorax above shining, with scattered punctures, those on the pleura very dense; metathorax rugose; tegulæ honey yellow; wings hyaline, faintly iridescent, with a rather large fuscous cloud just beyond the marginal cell; nervures yellowish, stigma rather large and blackish; marginal cell short, not longer than the stigma, broadly rounded at tip; three distinct submarginal cells, the second small, subtriangular and receiving the two recurrent nervures, the third still smaller and quadrate, the apical nervure about on a line with the tip of the stigma; legs entirely luteous yellow, with thin, pale pubescence; abdomen oblong ovate, pointed at tip, petiolated, rather closely punctured, shining and with a scattered, long, pale pubescence; the first, or petiole segment, half the length of the whole abdomen, very slender at base, with the posterior half greatly swollen and ovate; the extreme apex of the abdomen with a short, acute, recurved spine, and the fourth and fifth ventral segments have at the extreme apical middle of each two tufts of erect setæ. Length 7–8.5 mm.

Hab.—Colorado. Two specimens.

Easily recognized by the fuscous cloud beyond the stigma on the anterior wings; the small specimen has the neuration of the anterior wings remarkably variable; on the left wing the third submarginal cell is very narrow and transverse, while on the right wing it is obliterated and thrown into the second submarginal, making that cell nearly as large as the first; the marginal cell in both wings is narrower than in the large specimen, and merely margins the stigma.

Photopsis ampla Blake.

Male.—Head transverse, small, black, polished; eyes and ocelli large, prominent; mandibles honey yellow before the tips; antennæ fulvous; thorax elongate ovate, narrowed to apex, dark honey yellow, shining; metathorax tapering

posteriorly, smooth; flanks of mesothorax swollen; wings as long as entire insect, hyaline, iridescent; marginal cell short, arcuate, lying almost entirely beneath the stigma, which is large, lanceolate, fuscous, first submarginal as large as the second and third together, second small, triangular, receiving the first recurrent near the base, third subquadrate, receiving the second recurrent near the middle; tegulæ honey yellow; legs pale honey yellow, thinly clothed with yellow pubescence; abdomen elongate ovate, petiolate, petiole long, thinly clothed with white hairs, second and following segments fuscous, with the apical margins dark honey yellow, clothed with a few scattered hairs. Length 14-16 mm.

Hab.—Colorado. Two specimens.

Allied to *alcanor* Blake, but may be easily separated by the form of the metathorax.

Photopsis nitida Cresson.

Male.—Pale chestnut brown, polished, very sparsely punctured, clothed with a long, scattered, pale pubescence; antennæ and tegulæ pale testaceous; postscutellum with a central pit; disk of metathorax with a shallow, longitudinal depression, slightly striated at base; wings hyaline, faintly tinged with yellowish; nervures and stigma fuscous; marginal cell very short, appendiculated at tip; second submarginal cell triangular, petiolated; third submarginal cell large, subquadrate; abdomen very feebly punctured; basal segment petiolate, gradually dilated to tip; disk faintly sulcate; venter tinged with fuscous. Length 11-14 mm.

Hab.—Colorado. Lieutenant C. W. Whipple.

This is allied to *P. alcanor* Blake.

Photopsis alcanor Blake.

Male.—Head black, rounded, wider than the thorax, very finely punctured, mandibles black, tridentate at tips; eyes very large, prominent; ocelli also large; antennæ fulvo-testaceous, more than half as long as entire insect, the joints curved, presenting a slightly scolloped appearance when viewed laterally; thorax chestnut brown, elongate subquadrate, truncate in front, disc of mesothorax subconvex, shining, feebly and remotely punctured, with two lateral, longitudinal impressed lines, the lateral lobes finely and closely punctured, metathorax truncate, shining, the dorsal groove extending to apex; wings pale yellowish hyaline, nervures pale fuscous; stigma large, marginal cell short, roundly obliquely truncate at tip, three distinct submarginal cells, the first nearly as long as the stigma and marginal cell combined, dilated towards the base, second subtriangular, truncate at base and lying entirely beneath the first, receiving the first recurrent beyond the middle; legs castaneous, thinly clothed with pale hairs, more dense on the tibiæ and tarsi; abdomen elongate, petiolate, chestnut brown, shining, petiole pyriform, minutely punctured, punctures coarser about the apex, second and following segments feebly punctured and sparsely clothed with scattered pale pubescence. Length 13 mm.; expanse of wings 23.5 mm.

Hab.—Arizona.

This species resembles *P. castanea* Cresson, but may be known by the greater length of antennæ and the head being entirely black.

Photopsis atrata Blake.

Male.—Uniform black, shining, thinly clothed with a few scattered, erect hairs; head transverse, as wide as thorax; antennæ fuscous, mandibles dark ferruginous; eyes large, round, prominent; thorax robust, ovate, narrowed posteriorly, flanks beneath the wings much swollen; wings hyaline, iridescent; marginal cell very short, arcuate, rounded at apex, first submarginal large, second triangular, receiving the first recurrent near the base, third quadrate, receiving the second recurrent before the middle; stigma large, black; tegulæ honey yellow; femora black, tibiæ and tarsi fuscous, clothed with pale pubescence; abdomen elongate ovate, petiolate; petiole pyriform, with a longitudinal dorsal impression, not extending to apical margin, which is constricted, and on ventral surface a longitudinal sulcus, widening to apex; apical margins of segments narrowly fusco-ferruginous. Length 7-9 mm.

Hab.—Nevada. Seven specimens.

Easily distinguished by the uniform black color and extreme shortness of the marginal cell.

Photopsis albipes Cresson.

Male.—Uniform dark honey yellow, clothed with long, thin, pale pubescence, more dense on abdomen, sparsely punctured, metathorax closely and rather coarsely reticulated; mandibles pale, with black tips and long hairs; palpi pale; antennæ yellowish white, scape with long hairs; wings pale yellowish hyaline; marginal cell with a fuscous cloud, rather narrow, about equal in length with the stigma, truncate at tip; second submarginal cell subtriangular, the third subquadrate, slightly narrowed beneath; legs entirely yellowish white, clothed with long whitish pubescence; abdomen more or less tinged with fuscous, ovate, petiolate, the petiole long, much swollen beyond the middle, strongly and rather closely punctured, the apex strongly constricted. Length 11-12 mm. (Cresson.)

Hab.—Nevada.

Photopsis sobrinus n. sp.

Male.—Uniformly dark honey yellow, transversely rounded, as wide as the thorax, shining and minutely punctured; eyes and ocelli large and prominent, mandibles bidentate at tips; antennæ long, fulvo-testaceous; thorax elongate ovate, narrowed posteriorly, mesothorax convex, shining, very minutely and distantly punctured and having on the disc two deeply impressed, longitudinal lines extending to the scutellum, which is convex and polished; metathorax roundly truncate, the dorsal groove reaching to the apex; wings faintly yellowish hyaline, marginal cell short, ovate and abruptly truncate at tip, three submarginal cells, the first elongate subquadrate, as large as the second and third combined, the second forming a small right angle triangle and receiving the first recurrent nervure close to the base, the third quadrate, receiving the second recurrent nervure at middle; stigma large, ovate, dark honey yellow; tegulæ moderately large, pale honey yellow, polished; legs concolorous with the body, very sparsely clothed with yellowish hairs; abdomen elongate ovate, petiolate narrowed to apex, polished; petiole subpyriform, having a slight longitudinal depression on the disc, extreme apex fuscous, ventral surface, second and remaining segments more or less stained with testaceous. Length 12 mm.; expanse of wings 22 mm.

Hab.—Colorado.

This species is allied to *P. alcanor*, but may be distinguished by the head being concolorous with the body, whereas it is black in that species, and by the paler color of the entire insect.

Photopsis lepidus n. sp.

Male.—Uniform dark honey yellow; head transversely rounded, not as wide as the thorax, minutely punctured; eyes and ocelli large and prominent, tips of mandibles black; antennæ fusco-ferruginous, scape very short, minutely punctured, joints of the flagellum crenulate when viewed laterally; thorax robust, prothorax narrow, mesothorax convex, shining, very feebly punctured and bearing two lateral, longitudinal, impressed lines on the disc; scutellum prominent, triangular, rounded posteriorly, shining, very feebly punctured, metathorax roundly truncate, smooth, dorsal groove extending to apex, lateral lobes of mesothorax very prominent, closely and finely punctured; wings ample, three submarginal cells, the first as large as the second and third combined, second triangular, receiving the first recurrent nervure before the middle, second elongate subquadrate, its outer nervure arcuate, receiving the second recurrent at middle; marginal cell short, roundly truncate, stigma large, fuscous; all the nervures fuscous; tegulæ large, dark honey yellow, polished; legs uniform honey yellow, very feebly pubescent; abdomen elongate, sparsely clothed with pale hairs, basal segment pyriform and having on the disc a shallow, longitudinal groove, second and following segments shining, more or less stained laterally with testaceous patches, disc of second segment beneath castaneous. Length 16 mm.; expanse of wings 28 mm.

Hab.—Colorado.

This species is allied to *P. ampla* Blake, but may be separated by the head being concolorous with the body, whereas in the latter it is black.

Photopsis tapajos Blake.

Male.—Uniform dark honey yellow; thinly clothed with long whitish hairs; head subquadrate, as wide as the thorax, very finely punctured, shining, the space behind the ocelli deeply impressed; eyes large, round and prominent; antennæ brownish, pale yellow at base; tips of the mandibles black; thorax densely punctured; mesothorax with four longitudinal, impressed lines; metathorax very coarsely reticulated, roundly truncate; tegulæ small; wings hyaline, marginal cell elongate, rounded to tip, first submarginal long, narrow, second obliquely subquadrate, pointed towards the base and receiving the first recurrent nervure a little before the middle, third nearly obsolete, narrowed beneath, so that its apical nervure is opposite to and joins the second recurrent; stigma nearly black, the apical half lying within the marginal cell; a faint fuscous cloud in the discoidal region, nervures fuscous; legs thinly clothed with pale hairs, coxæ and trochanters pale yellow; abdomen elongate ovate, petiole closely punctured, second segment shining, very finely and remotely punctured, apical margins of the segments fringed with pale white pubescence, ventral segments same as above; apex armed with two acute, recurved spines. Length 11-12 mm.; expanse of wings 19 mm.

Hab.—Texas. Mr. Belfrage.

Closely allied to *P. clara* Cresson, but may be distinguished by the greater length of the marginal cell and the absence of the apical fuscous streaks in the wings.

Photopsis venustus n. sp.

Male.—Robust, uniformly dark honey yellow; head subquadrate, posterior angles rounded, finely and irregularly punctured, shining, thinly clothed with erect, pale yellowish hairs; mandibles finely punctured, black at tips and thinly clothed with pale hairs; eyes large, round and polished; antennæ fuscous, scape clothed with fuscous pubescence; thorax ovate, slightly narrowed posteriorly, pro- and mesothorax finely punctured, clothed with erect yellowish hairs; metathorax roundly truncate, coarsely reticulate, thinly clothed with erect white hairs; scutellum very finely punctulate; wings hyaline, two submarginal cells, marginal cell elongate ovate, first submarginal cell long and narrow, second elongate subquadrate, pointed towards base and receiving the first recurrent nervure before the middle, stigma small, costal cell wide, tegulæ pale honey yellow; legs pale honey yellow, clothed with long pale hairs; abdomen ovate, shining, finely and remotely punctured, sparsely clothed with moderately long, whitish hairs; basal segment campanulate, subsessile with the second, apical margins of all the segments fringed with whitish pubescence; under side of entire insect finely punctured. Length 15 mm.; expanse of wings 24 mm.

Hab.—Arizona.

Allied to *P. tapajos* Blake, but may be distinguished by the greater length of the marginal cell, and by being more robust.

Photopsis juxta Blake.

Male.—Uniform dark brown; thinly clothed with whitish hairs; head rounded, narrowed posteriorly, finely punctured; eyes large, prominent as well as ocelli; antennæ pale honey yellow; mandibles tipped with black; thorax robust, elongate ovate, shining, finely punctured; mesothorax with four longitudinal impressed lines, metathorax roundly truncate, broadly reticulate; wings moderate, yellowish hyaline; marginal cell broadly ovate, first submarginal elongate, second subquadrate, pointed towards base, its basal nervure sinuate; stigma elongate, its apical three-fourths lying within the marginal cell; tegulæ round, polished, honey yellow, thinly clothed with whitish hairs, calcaria fuscous; abdomen elongate ovate, petiole subpyriform, second segment shining, feebly and remotely punctured; apical margins of all the segments castaneous, thinly fringed with pale yellowish pubescence. Length 9 mm.; expanse of wings 18 mm.

Hab.—Texas. Belfrage.

Photopsis aulus Blake.

Male.—Uniform dark honey yellow, thinly clothed with erect white hairs; head subquadrate, posterior angles rounded, shining, very minutely and distantly punctured; eyes large, round, prominent, ocelli moderate; scape of antennæ honey yellow, scutellum fuscous; tips and upper edge of mandibles blackish; thorax elongate subquadrate, rounded in front, pro- and mesothorax finely punctured, the latter with four faintly impressed longitudinal lines, metathorax roundly truncate, broadly and shallowly reticulate; wings moderate yellowish hyaline, marginal cell large, ovate lanceolate, first submarginal cell narrow,

second subquadrate, pointed towards base, its basal nervure sinuate, third subobsolete; stigma fuscous, its apical two-thirds lying within the marginal cell; tegulæ round, polished, honey yellow; legs fuscous, thinly clothed with whitish hairs; abdomen elongate ovate, petiole pyriform, its ventral carina terminating anteriorly in an obtuse tooth, second segment shining, minutely and distantly punctured; apical margins of all the segments fringed with white pubescence. Length 11 mm.; expanse of wings 18 mm.

Hab.—Texas. Belfrage.

DIVISION II.

Abdomen, with the first abdominal segment, more or less sessile with the second, fig. 19; wings with two submarginal cells.

Fig. 19.

Photopsis rustica Blake.

Male.—Head round, as wide as the thorax, honey yellow, clothed with erect fulvous hairs; eyes and ocelli prominent; antennæ fuscous, as long as the head and thorax, flagellum pruinose; thorax black, disc of mesothorax clothed with coarse fulvous pubescence, metathorax roundly truncate, coarsely and broadly reticulate; wings yellowish hyaline, clouded about the middle and apex; marginal cell ovate lanceolate, first submarginal narrow, pointed towards the base, second subquadrate, receiving the first recurrent near the base; legs black, thinly clothed with white hairs, calcaria fuscous; abdomen elongate ovate, petiolate, narrowed to apex, petiole fuscous, finely punctured, thinly clothed with long white pubescence, apical fringe yellow, second and following segments honey yellow, the apical margins fringed with long yellow pubescence, second segment beneath fuscous. Length 16 mm.

Hab.—California. Henry Edwards.

Photopsis bicolor Blake.

Male.—Head and thorax dark honey yellow, thinly clothed with erect white pubescence; head subquadrate, posterior angles rounded, finely punctured; eyes round, large, prominent; antennæ fuscous toward the tips; tips of mandibles fuscous; thorax ovate, narrowed posteriorly, closely punctured, metathorax roundly truncate, broadly reticulate; wings hyaline, faintly tinged with yellowish toward apex, marginal cell ovate, first submarginal narrow, second subtriangular, receiving the first recurrent about the middle; tegulæ round, honey yellow; legs fuscous, paler about the joints, clothed with fine white pubescence, calcaria long; abdomen fuscous, ovate, petiolate, petiole subsessile with the second segment, smooth, minutely and remotely punctured, thinly clothed with long, erect, white pubescence. Length 5 mm.

Hab.—Texas. Two specimens.

Allied to *P. nokomis* Blake, but may be easily separated by the small size and the triangular second submarginal cell.

Photopsis astyanax Blake.

Male.—Fusco-ferruginous; head quadrate, posterior angles rounded, finely punctured, thinly clothed with erect yellowish hairs; eyes large, prominent, polished; antennæ fuscous, scape punctured, flagellum pruinose; thorax ovate, narrowed posteriorly, closely punctured, mesothorax with two short, impressed, longitudinal lines, thinly clothed on disc with yellowish pubescence, metathorax roundly truncate, broadly reticulate, flanks deeply excavate; wings yellowish hyaline, marginal cell ovate, lanceolate, roundly truncate at tip, first submarginal small, narrow, second subquadrate, narrowed to apex, receiving the first recurrent before the middle; tegulæ dark honey yellow; legs fuscous, clothed with yellowish pubescence, calcaria long; abdomen ovate, basal segment campanulate, subsessile with the second, minutely punctured; apical margins of the segments fringed with white. Length 14 mm.

Hab.—Texas. Two specimens.

Photopsis inconspicuus n. sp.

Male.—Uniform honey yellow; head rounded, minutely punctured, thinly clothed with erect, coarse, yellowish hairs; eyes and ocelli large and prominent, mandibles stout, tipped with black, clothed with scattered yellowish pubescence; antennæ fulvo-ferruginous, scape closely punctured and clothed with yellow pubescence; thorax ovate, pro- and mesothorax coarsely punctured and moderately densely clothed with coarse fulvous pubescence, metathorax roundly truncate, coarsely and deeply reticulate; lateral lobes of mesothorax finely punctured; wings faintly yellowish hyaline, two submarginal cells, the first long and narrow, the second elongate subquadrate, pointed towards base and receiving the recurrent nervure before the middle, the marginal cell broadly ovate, rounded to tip; stigma small, honey yellow; tegulæ pale honey yellow, shining; legs pale honey yellow, thinly clothed with glittering yellow hairs; abdomen elongate ovate, basal segment campanulate, sessile with the second, minutely punctured and clothed with long whitish pubescence, second segment shining, very minutely punctured and sparsely clothed with whitish hairs, the remaining segments more densely clothed; ventral surface somewhat paler than above. Length 14 mm.; expanse of wings 22 mm.

Hab.—California.

Photopsis minuta Blake.

Male.—Uniform dark honey yellow; head round, shining, minutely punctured; eyes large, prominent; antennæ pale fuscous; thorax elongate ovate, closely punctured, metathorax roundly truncate, broadly and feebly reticulate; wings hyaline, marginal cell ovate, first submarginal large, second small, subtriangular, pointed towards base, receiving the first recurrent nervure at base; stigma large, pale fuscous, two-thirds within the marginal cell; tegulæ round, pale honey yellow; legs honey yellow, thinly clothed with white hairs; abdomen elongate ovate, petiole pyriform, the ventral carina terminating in a sharp tooth anteriorly, second segment shining, minutely punctured; apical margins of all the segments thinly fringed with pale pubescence. Length 4 mm.; expanse of wings 7 mm.

Hab.—Texas. Belfrage.

Subdivision II.

Wings with three submarginal cells.

Photopsis uro Blake.

Male.—Ferruginous; head round, not as wide as thorax, minutely punctured, thinly clothed with erect white hairs; eyes round, prominent; scape of antennæ finely punctured; thorax robust, ovate, closely punctured, mesothorax with two longitudinal, impressed lines, sparsely clothed with erect white hairs, metathorax roundly truncate, coarsely reticulate, excavations of the flanks smooth; wings yellowish hyaline, marginal cell ovate lanceolate, abruptly truncate at tip; first submarginal subovate, pointed at base, second subtriangular, receiving the first recurrent nervure before the middle; tegulæ honey yellow; legs fuscous, clothed with whitish pubescence; abdomen short, petiolate, minutely punctured, smooth; apical margins of segments thinly fringed with white pubescence. Length 10 mm.

Hab.—Texas. Two specimens.

Photopsis castanea Cresson.

Male.—Uniform dark chestnut brown, densely and finely punctured, shining, clothed with a thin, palish pubescence; head slightly wider than the thorax, the eyes very large and prominent, entire; ocelli very large and prominent, enclosed by a black spot; face much depressed beneath the antennæ; upper surface of the mandibles broad and concave, outer surface rather densely clothed with short yellowish pubescence; palpi pale luteous; antennæ longer than the head and thorax, fulvo-testaceous, and when viewed sideways they have a scolloped appearance, the joints beneath being contracted at their sutures; thorax broad and truncate in front, prothorax closely punctured, depressed above and somewhat prominent on each side; mesothorax subconvex, with large, deep, sparse punctures; on each side over the tegulæ a deeply impressed longitudinal line; scutellum large, with large, scattered punctures; pleura densely punctured; metathorax quadrate, with scattered punctures, shining, abrupt on the sides and behind, the posterior face concave; on the dorsal middle two longitudinal approximated carinæ, confluent behind; tegulæ smooth and polished, chestnut brown; wings pale yellowish hyaline; nervures fuscous, stigma rather large; marginal cell short, obliquely truncate at tip; three distinct submarginal cells, the first long and narrow, nearly as long as the stigma and marginal cell taken together; the second longitudinally subtriangular, much narrowed towards the base of the wing and continued beneath the first submarginal to near its base, receiving the first recurrent nervure beyond the middle; third submarginal very short, narrow, transversely quadrate, receiving the second recurrent nervure at the apex; legs fulvo-testaceous, clothed with pale yellowish pubescence, quite dense on the tibiæ and tarsi; abdomen elongate, sparsely punctured, shining, the punctures becoming finer and less distinct towards the apex, the pubescence on the basal segments short and thin, longer and thicker on the apical segment; first segment large and much swollen, with a short peduncle, the segment nearly as broad as the second, the apical margin constricted; last ventral segment with a long, acute, recurved spine. Length 13 mm.; expanse of wings 22.5 mm.

Hab.—Lower California. Mr. H. Ulke.

This may be distinguished by the uniform dark chestnut brown color, the elongate abdomen and the singular neuration of the wings.

Photopsis glabrella Cresson.

Male.—Uniform obscure honey yellow, very smooth and polished, clothed with a thin, pale yellowish pubescence: head black, with fine scattered punctures; eyes very large and prominent, entire and rounded; ocelli also large and prominent; clypeus and mandibles obscure honey yellow, the former very transverse and much depressed; the mandibles large, broad, the upper margin sinuate and acutely carinate, the apex with three short, obtuse, blackish teeth; antennæ longer than the head and thorax, filiform; thorax rather broad in front, with thin, subappressed, yellowish sericeous pubescence; prothorax sunken, not prominent; mesothorax large, rather broadly margined anteriorly and on each side over the tegulæ a finely impressed longitudinal line, the surface polished, with a few scattered delicate punctures; scutellum smooth, with a few long pale hairs; pleura rather closely punctured, very prominent on the sides and beneath and behind it a very deep, oblique excavation; metathorax very finely sculptured, subopaque, subquadrate, abrupt on the sides and behind with a long, thin, pale pubescence; wings ample, hyaline; nervures fuscous, stigma moderate, blackish; marginal cell very short, scarcely more than half the length of the stigma the apex appendiculated and subacute, the lower nervure more robust than the upper; three distinct submarginal cells, the first as long as the stigma, much narrowed at tip; the second small, triangular, receiving the first recurrent nervure near the base, which is pointed; the third submarginal rather large, quadrate and receiving the second recurrent nervure about the centre; legs color of the body, thinly pubescent, the tibiæ and tarsi paler; abdomen elongate ovate, pointed at apex, petiolated, clothed with a long yellowish pubescence, more dense towards the apex; first or petiole segment very slender at base and greatly swollen behind the middle and subglobose; posterior margins of the segments depressed or broadly margined. Length 11 mm.; expanse of wings 17 mm.

Hab.—Colorado.

Closely allied in form and color to *P. nubecula*, but may be at once distinguished from that species by the smoother surface of the body, the black head, hyaline wings and the shape of the metathorax.

Photopsis hyalina Blake.

Male.—Uniform honey yellow; head subquadrate, posterior angles rounded, finely punctured; eyes large, prominent; antennæ pale honey yellow; mandibles black at tips; thorax elongate quadrate, finely punctured, mesothorax with two faintly impressed longitudinal lines; metathorax roundly truncate, coarsely reticulate; tegulæ small, pale yellow; wings hyaline, faintly iridescent, marginal cell ovate, first submarginal small, narrow; second short, obliquely subquadrate, receiving the recurrent nervure near the base, stigma prominent; legs pale honey yellow; abdomen ovate, narrowed to apex, shining, finely punctured, basal segment campanulate, apical margins of segments fringed with silvery pubescence; entire insect sprinkled with pale hairs. Length 5.5 mm.; expanse of wings 9 mm.

Hab.—Texas. Mr. Belfrage.

Photopsis nebulosus n. sp.

Male.—Uniform honey yellow; head rounded, not as wide as the thorax, moderately densely clothed with long, glittering whitish hairs, closely punctured, shining; eyes large, polished; tips of mandibles black, scape of antennæ clothed with sericeous honey yellow pubescence; thorax elongate ovate, pro- and mesothorax finely punctured, clothed with glittering, erect honey yellow pubescence, metathorax roundly truncate, coarsely reticulate, thinly clothed with long, erect, white hairs; lateral declivities deep, polished; wings hyaline, having a fuscous cloud in the third discoidal and first apical cells, the marginal cell ovate, roundly pointed at tip, first submarginal narrow and pointed at base, second short, subquadrate, receiving the first recurrent nervure about the middle, third nearly obsolete, narrowed beneath and receiving the second recurrent nervure before the middle, stigma moderate, its apical two thirds being within the marginal cell; tegulæ small, honey yellow; legs: femora fuscous, thinly clothed with glittering white hairs, tibiæ and tarsi honey yellow, clothed with shorter hairs; abdomen ovate, shining, minutely punctured, clothed above with erect, pale yellowish hairs; basal segment campanulate, subsessile with the second and having on each side a minute tubercle; apical margins of segments fringed with pale yellowish above, shining. Length 13 mm.; expanse of wings 24 mm.

Hab.—Southern California.

Photopsis abdominalis n. sp.

Male.—Dark honey yellow; head subquadrate, posterior angles rounded, shining, minutely punctured; eyes and ocelli prominent, a rounded tubercle beneath the eyes, mandibles densely and finely punctured, clothed with yellow pubescence; antennæ fulvo-ferruginous; thorax ovate, thinly clothed with white pubescence, mesothorax minutely punctured and having two impressed longitudinal lines on the disc, metathorax obliquely truncate, covered with broad, shallow reticulations; lateral lobes coarsely and confluently punctured; wings hyaline, faintly iridescent; marginal cell short, broadly ovate, truncate at tip, first submarginal elongate, second subquadrate, pointed to base, receiving the first recurrent near the base, third narrowed beneath, its outer nervure nearly obsolete, stigma large, fuscous; nervures of all the wings fuscous; tegulæ pale honey yellow; legs obscure honey yellow, posterior femora and tibiæ fuscous, clothed with glittering white hairs; abdomen elongate ovate, thinly clothed with erect, glittering white hairs; basal segment campanulate, subsessile with the second, shining, with a few minute punctures; second segment polished, its apical margin fringed with short, silvery pubescence, the remaining segments broadly fuscous, apically, shaded with pale honey yellow basally, ventral surface same as above. Length 10 mm.; expanse of wings 18 mm.

Hab.—Colorado.

Photopsis pallida Blake.

Male.—Uniform pale honey yellow; sparsely clothed with yellowish white hairs; head rounded, feebly punctured; eyes and ocelli round, prominent; antennæ nearly as long as the head and thorax; thorax: pro- and mesothorax finely punctured, shining; metathorax rounded, broadly reticulate, with a smooth, shining space at middle; tegulæ small; wings moderate, hyaline, marginal cell rather broadly lanceolate, first submarginal long and narrow, second obliquely subquadrate, pointed towards the base, its basal nervure slightly sinuate and

receiving the first recurrent before the middle; third subobsolete; stigma fuscous, elongate lanceolate, its apical half lying within the marginal cell; legs dark honey yellow, thinly clothed with yellowish hairs; trochanters and coxæ pale yellow; abdomen elongate ovate, shining, finely and remotely punctured; basal segment campanulate, second segment somewhat darker about the base; the sutural carinæ prominent; dark fuscous, apical margin of the segments thinly fringed with pale hairs; apex armed with two minute recurved spines. Length 7 mm.; expanse of wings 11 mm.

Hab.—Texas. Mr. Belfrage.

This species is closely allied to *P. unicolor* Cresson, but may be distinguished by the absence of the thoracic lines and the distinct fuscous lateral carinæ of the second abdominal segment.

Genus 5, **CHYPHOTES** nov. gen.

Females apterous; mandibles arcuate, with small tooth before the apex; maxillary palpi 4-jointed, the labial palpi 2-jointed, short; eyes roundly ovate, polished; thorax divided in two parts, prothorax short and convex, meso- and metathorax in one, globose; basal joint of anterior tarsus deeply emarginate within; femora and tibiæ more robust than in *Photopsis;* abdomen petiolate, the petiole slender and cylindrical to base, suddenly and greatly dilated at apex, where it is subglobose and sessile with the second segment.

Figs. 19 and 20 give a dorsal and lateral view.

This remarkable form may possibly prove to be the female of *Photopsis.*

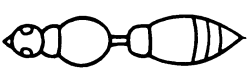


Fig. 19.

Fig. 20.

Chyphotes elevatus n. sp.

Female.—Uniformly ferruginous; head round, closely punctured, thinly clothed with pale, glittering pubescence; mandibles black at tips; antennæ fulvo-ferruginous; eyes polished; thorax very convex, densely punctured and thinly clothed with pale hairs; legs clothed with glittering yellowish hairs, honey yellow, with the apical half of the intermediate and posterior femora fuscous; abdomen elongate ovate, closely punctured and thinly clothed with erect, pale, glittering hairs; the apical margin of second and the following segments stained with castaneous; ventral surface of second segment with a narrow, central blackish line not quite reaching the apical margin. Length 6-8.5 mm.

Hab.—Arizona, Southern California. Six specimens.

Genus 6, **APTEROGYNA** Latr.

Head roundly transverse; antennæ of male nearly as long as the body; thorax more or less ovate, metathorax bidentate posteriorly; abdomen petiolate, basal segment globose, second transversely subglobose; wings hyaline, one submarginal cell, entire neuration confined to the basal area (fig. 21); thorax of the female divided into two parts; basal segment of abdomen similar to the male, second large and subsessile with the third. Unrepresented.

Fig. 21.

Genus 7, **BRADYNOBÆNUS** Spin.

Female.—Head quadrate, mandibles elongate, arcuate, palpi filiform, the maxillary palpi 3-jointed; the labial palpi 2-jointed, very short; thorax divided in two parts; femora and posterior tibiæ dilated; abdomen petiolate, elongate, regularly ovate. Unrepresented.

Genus 8, **MYRMOSA** Latr.

Head subglobose; stemmata placed in a triangle on the vertex; eyes small, round and lateral; antennæ subfiliform, inserted in the female at each side of the base of the clypeus and approximate; in the male they are wider apart; the clypeus triangular and longitudinally carinate in the female; in the male transverse and plane; mandibles unidentate and acuminate in the female; large and tridentate in the male; the thorax longitudinally quadrangular, the anterior angles rounded; the metathorax truncate in the female; the thorax ovate in the male; the collar transverse, curving towards the base of the wings posteriorly, not reaching them; the anterior wings with one marginal and four submarginal cells, the second submarginal triangular, receiving the first recurrent nervure near its centre; the third quadrate, receiving the second recurrent nervure at about one-third of its length, the fourth extending to the apex of the wing; the legs spinose; abdomen of the female ovato-conical, the first segment somewhat narrower than the second; the abdomen of the male oblong, the margins of the segments crenate, the last concave above and tridentate at its apex, which is truncated.

Myrmosa rufiventris Blake.

Male.—Head large, black, quadrate, wider than the thorax, finely punctured, thinly clothed with erect black hairs; eyes ovate, prominent; antennæ black, flagellum pruinose; mandibles stout, thinly clothed with pale hairs; thorax ovate, narrowed posteriorly, mesothorax with two dorsal, longitudinal impressions, scutellum convex, metathorax roundly truncate, closely and minutely punctured; wings hyaline, iridescent, marginal cell large, lanceolate, first submarginal short, second elongate subquadrate, receiving the first recurrent nervure a little before the middle, third quadrate, receiving the second recurrent about the middle; tegulæ black; legs black, slender, slightly pruinose, calcaria pale; abdomen elongate ovate, petiolate, petiole black, remaining segments dark ferruginous, paler at sides. Length 5.5 mm.

Hab.—Nevada. One specimen.

Myrmosa unicolor Say.

Male.—Black; abdomen with cinereous hair; metathorax with an impressed line; head with short cinereous hair, somewhat longer about the mouth; densely punctured; thorax and scutel densely punctured and with scattered, cinereous, short hair, posterior segments of the former with two light, parallel, impressed lines; wings hyaline, nervures fuscous; metathorax with a longitudinal, impressed, very distinct line, and a transverse one at base; hairs more obvious each side; punctures smaller than those of the thorax; abdomen more hairy than any other part of the body. Length three-tenths of an inch (8.5 mm.) (Say.)

Hab.—N. W. Territory.

This insect also occurred on the Missouri at Engineer's cantonment and in Pennsylvania.

Genus 9, **METHOCA** Latr.

Male.—Head transverse, flattened in front, convex behind; eyes ovate, prominent and lateral; the stemmata large, placed in a triangle on the vertex; antennæ filiform, tapering to a point at the apex; the scape very short; the joints of the flagellum beyond the third subarcuate; thorax oblong, the collar extending to the insertion of the wings; the metathorax obtuse; the anterior wings with one elongate marginal cell, which is pointed at its apex and extends nearly to the tip of the wing; three submarginal cells, the first as long as the two following, receiving the first recurrent nervure; the second quadrangular, receiving the second recurrent nervure; the third extending to the apex of the wing; abdomen linear, the segments subcrenate; the hypopygium produced laterally into two vertical plates, arcuate at their extremity, beneath produced into a long, recurved, acute spine.

Female.—Head subglobose; eyes ovate and lateral; the stemmata placed in a triangle on the vertex; antennæ filiform, inserted

at the lateral posterior margins of the clypeus, rather longer than the thorax; the clypeus triangular; the mandibles arcuate; the thorax elongate, doubly strangulated, rounded at the base and apex; legs long and slender, the coxæ very robust; femora subclavate; the tarsi longer than the tibiæ; abdomen ovato-conical, attached to the thorax by a short petiole.

Methoca bicolor Say.

Female.—Body pale yellowish rufous, polished; head black; antennæ rufous, terminal joints piceous; mandibles and palpi rufous; thorax: segments subequal, anterior and posterior ones convex, subovate, intermediate one with two slightly elevated convexities; abdomen ovate subfusiform; tergum with a transverse, triangular black spot at the tip of the second segment, another on the third, the remaining ones confluent. Length one-fourth of an inch. (7 mm.)

Hab.—Indiana.

The abdomen does not contract abruptly to the petiole, but subsides gradually. Van der Linden says that the species of this genus are the females of species of *Tengyra*.

Methoca californica Westw.

Female.—Entirely castaneous, smooth and shining; head convex, flanks of thorax globose; antennæ straight, scarcely equal in length to the head and thorax, almost filiform, apical joints blackish; base of the collar ovate, truncate; mesonotum narrow, divided into two parts, nearly globose; abdomen gibbous, second and following segments clouded at middle with black markings; sting long and slender, with a small lobe on each side; legs long, unarmed. Length 9 mm.

Hab.—California.

Methoca canadensis Smith.

Male.—Black and shining, slightly villose, the face closely punctured, the vertex sparingly so; the anterior margin of the clypeus produced into an elevated tubercle, the tips of the mandibles ferruginous; thorax coarsely punctured, the metathorax coarsely rugose, having above a central channel, which is transversely ridged; behind, truncate; the truncation obliquely rugose striate on each side, having a slight central channel; the legs have the apical joints of the tarsi obscurely rufo-piceous, the calcaria ferruginous; wings hyaline, faintly colored; abdomen: the basal half of the first segment rugose, the lateral margins elevated and acute; beyond this the entire abdomen is rather finely and distantly punctured, the base of the segments depressed, their margins constricted. Length 10 mm.

Hab.—Canada.

Methoca Poeyi Guér.

Male.—Black, without spots, with some whitish hairs; the metathorax is slightly rugose and truncate; wings hyaline, the nervures black, the two transverso-cubital nervures, which from the second submarginal cell, are not parallel,

as in *M. Sanvitali*; the abdomen is smooth and shining, the segments slightly contracted, with the last segment terminated by a recurved spine. Length 8 mm.

Female.—Red, with the abdomen black, with the exception of the first segment, which is equally red. Length 5 mm.

Hab.—Cuba.

Methoca stygia Say.

Male.—Body entirely black, immaculate, punctured, mandibles piceous at tip; near the tip one toothed; wings hyaline, nervures black, the separating nervure of the first and second cubital cellules wanting; stigma obvious, black; abdomen, segments contracted near the incisures, oviduct not extending beyond the terminal processes and concealed beneath them. Length two-fifths of an inch. (10 mm.)

Hab.—Indiana.

Resembles *Sanvitali* Latr., but is larger, with a much larger stigma and each abdominal segment is much more contracted before its posterior incisure. (Say.)

The following descriptions are too meagre to identify; they will apply to several of our North American species, so I give them in the original:

Mutilla versicolor Fab.

M. abdomine basi apiceque nigro medio rufo: fascia alba; puncto nigro.

Habitat in America. Dom Drury.

Caput cum antennis rufum. Thorax rufous, immaculatus. Abdomen basi nigrum, in medio rufum; fascia alba; puncto nigro. Apex iterum niger. Pedes fusci.

Mutilla exulans Fab.

M. atra abdomine punctis duobus baseos striga interrupta lineolaque postica flavis.

Habitat in America. Dom Drury.

Statura præcedentis; caput and thorax atra, immaculata. Punctum utrinque flavum ad basin abdominis, striga interrupta in medio aud postice linea dorsalis fere obsoleta e puncto parvo in singulo segmento.

Mutilla vagans Fab.

M. rufa abdomine obscuriore segmentorum marginibus punctisque duobus secundi segmenti albis.

Habitat in America boreali. Dom v. Rohr.

Statura et magnitudo *M. nigripes*. Caput rufum antennis nigris obscurum segmentis omnibus margine albis sendundoque maiori punctis duobus dorsalibus albis. Pedes rufi tibiis obsburioribus.

INDEX.

PAGE.

PSAMMOTHERMA Latr.

Ajax Blake, Transactions American Entomological Society iii, 1871, 226, ♂ .. 931

MUTILLA Latr.

Cinaloa Blake, Transactions Am. Ent. Soc. iii, 1871, 231, ♀ 203
Contracta Say, Bost. Jour. i, 295; Blake, Trans. Am. Ent. Soc. iii, 229, ♂ .. 198
Copano Blake, Transactions Am. Ent. Soc. iii, 1871, 232, ♂ 205
Cubensis Blake, ibid. iii, 1871, 231, ♀ 202
Dubitata Smith, British Museum Catalogue iii, 60 ♀ 201
Euterpe Blake, Transactions Am. Ent. Soc. vii, 1879, 249, ♀ 201
Eximia Blake, ibid. xiii, 1886, 200, ♂ n. sp..... 200
Floridana Blake, ibid. iii, 1871, 245, ♀ 197
Floridensis Blake, ibid. vii, 1879, 249, ♂ 199
Gracilis Smith, British Museum Catalogue iii, 42, ♂ 202
Grotei Blake, Transactions Am. Ent. Soc. iii, 1871, 228, ♂ 195
Hexagona Say, ibid. iii, 1871, 228, ♂, Blake..... 195
Leona Blake, ibid. iii, 1871, 230, ♀ 200
Nana Smith, Descriptions of new Hymenoptera in Brit. Mus. 1879, 226, ♂ .. 205
Oajaca Blake, Transactions Am. Ent. Soc. iii, 1871, 228, ♂ ♀ 196
Ordinaria Smith, Descriptions of new Hymen. in Brit. Mus. 1879, 225, ♂ ... 204
Ornativentris Cresson, Proceedings Ent. Soc. Phila. iv, 1865, 438, ♀..... 196
Palliceps Cresson, ibid. iv, 1865, 112, ♀ 200
Parvula Blake, Transactions Am. Ent. Soc. xii, 1886, 206, ♀ n. sp..... 206
Peculiaris Cresson, ibid. v, 1876, 119, ♀ 203
Prometheæ Blake, ibid. iii, 1871, 229, ♂ 198
Puteola Blake, ibid. vii, 1879, 252, ♀ 206
Rufa St. Fargeau, Hymenoptera iii, 631, ♂ 201
Rutilans Blake, Transactions Am. Ent. Soc. vii, 1879, 248, ♀ 204
Sapiens Smith, Descriptions of new Hymen. in Brit. Mus. 1879, 225, ♂ 204
Sayi Blake, Transactions Am. Ent. Soc. iii, 1871, 229, ♂ 198
Scrupea Say, ibid. iii, 1871, 230, ♂, Blake. 202
Senex Guér., ibid. iii, 1871, 230, ♂, Blake..... 199
Terminata Smith, Descriptions of new Hymen. in Brit. Mus. 1879, 225, ♂ .. 205
Thoracica Blake, Transactions Am. Ent. Soc. xiii, 1886, 204, ♀ n. sp..... 204
Toltecæ Blake, ibid. iii, 1871, 246, ♀ 197
Trisignata Blake, ibid. iii, 1871, 241, ♀ 198
Yucatana Blake, ibid. iii, 1871, 231, ♀ 203

PAGE.

SPHÆROPHTHALMA Blake.

Admetus Blake, Transactions Am. Ent. Soc. iv, 1872, 74, ♂ 229
Ægina Cresson, Proceedings Ent. Soc. Phila. iv, 1865, 435, ♀ 221
Albopilosa Blake, Transactions Am. Ent. Soc. iv, 1872, 74, ♀ 241
Altamira Blake, ibid. iii, 1871, 244, ♀ 237
Andreniformis Smith, British Museum Catalogue iii, 55, ♂ 223
Antiguensis Fabr., Ent. Syst. ii, 367, ♂ 224
Apicalata Blake, Transactions Am. Ent. Soc. iii, 1871, 238, ♂ 230
Arachnoides Smith, British Museum Catalogue iii, 57, ♀ 236
Areneoides Smith, Descriptions of new Hymen. in Brit. Mus. 1879, 223, ♀ .. 256
Ariadne Blake, Transactions Am. Ent. Soc. iii, 1871, 243, ♀ 235
Arota Cresson, ibid. v, 1874–76, 120, ♀ 218
Asopus Cresson, Proceedings Ent. Soc. Phila. iv, 1865, 435, ♂ 225
Aspasia Blake, Transactions Am. Ent. Soc. vii, 1879, 250, ♀ 220
Auraria Blake, ibid. vii, 1879, 248, ♀ 218
Aureola Cresson, Proceedings Ent. Soc. Phila. iv, 1865, 385, ♀ 215
Auripes Blake, Transactions Am. Ent. Soc. iii, 1871, 254, ♀ 252
Auripilis Blake, ibid. iii, 1871, 233, ♂ 208
Azteca Blake, ibid. iii, 1871, 240, ♂ 232
Balopilus Blake, ibid. iii, 1871, 244, ♀ 237
Balteola Blake, ibid. iii, 1871, 248, ♀ 242
Bellona Cresson, Proceedings Ent. Soc. Phila. iv, 1865, 434, ♀ 221
Bexar Blake, Transactions Am. Ent. Soc. iii, 1871, 238, ♂ 229
Bioculata Cresson, Proceedings Ent. Soc. Phila. iv, 1865, 431, ♂ 224
Bisignata Blake, Transactions Am. Ent. Soc. iii, 1871, 252, ♀ 249
Blandina Smith, Descriptions of new Hymen. in Brit. Mus. 1879, 227, ♀ ... 257
Brazoria Blake, Transactions Am. Ent. Soc. iii, 1871, 255, ♀ 254
Californica Radoszk., Horæ Soc. Ent. Ross, 1861, 86, pl. 2, fig. 7, ♀ 219
Canadensis Blake, Transactions Am. Ent. Soc. iii, 1871, 252, ♀ 248
Canella Blake, ibid. iii, 1871, 239, ♂ 230
Caneo Blake, ibid. vii, 1879, 250, ♀ 241
Canina Smith, British Museum Catalogue iii, 58, ♀ 215
Capitata Smith, ibid. iii, 59, ♀ 246
Castor Blake, Transactions Am. Ent. Soc. iii, 1871, 237, ♂ 227
Chiapa Blake, ibid. iii, 1871, 253, ♀ 251
Chiron Blake, ibid. iv, 1872, 72, ♂ 220
Clio Blake, ibid. vii, 1879, 251, ♀ 214
Clotho Blake, ibid. iv, 1872, 72, ♀ 212
Coccineohirta Blake, ibid. iii, 1871, 235, ♂ ♀ 221
Comanche Blake, ibid. iii, 1871, 234, ♂ ♀ 211
Combusta Smith, British Museum Catalogue iii, 59, ♀ 216
Connectens Cresson, Proceedings Ent. Soc. Phila. iv, 1865, 387, ♀ 249
Contumax Cresson, ibid. iv, 1865, 437, ♀ 250
Creon Blake, Transactions Am. Ent. Soc. iv, 1872, 73, ♂ 228
Cressoni Blake, ibid. iii, 1871, 68, ♀ 234
Creusa Cresson, Proceedings Ent. Soc. Phila. iv, 1865, 431, ♀ 223
Cruciata Smith, British Museum Catalogue, iii, 42, ♀ 251
Cypris Blake, Transactions Am. Ent. Soc. iii, 1871, 246, ♀ 239

PAGE.

Derilicta Smith, Descriptions of new Hymen. in Brit. Mus. 1879, 226, ♀..... 255
Ducalis Smith, ibid. 1879, 224, ♀..... 256
Edwardsii Cresson, Transactions Am. Ent. Soc. v, 1876, 119, ♂..... 208
Electra Blake, ibid. iv, 1872, 75, ♀..... 248
Erato Blake, ibid. vii, 1879, 251, ♀..... 213
Erudita Cresson, ibid. v, 1876, 120, ♀..... 217
Fenestrata St. Fargeau, Hymenoptera iii, 267, ♂..... 228
Ferrugata Fabr., Syst. Piez. 438; St. Fargeau, Hymenoptera iii, 608, ♀... 239
Ferruginea Smith, Descriptions of new Hymen. in Brit. Mus. 1879, 226, ♀.. 249
Flavida Blake, Transactions Am. Ent. Soc. iii, 1871, 249, ♂..... 244
Formosa Blake, ibid. iii, 1871, 244, ♀..... 236
Four-guttata Say, Western Quarterly Reporter ii, 74, ♀..... 239
Frigida Smith, British Museum Catalogue iii, 60, ♀..... 239
Fulvohirta Cresson, Proceedings Ent. Soc. Phila. iv, 1865, 433, ♂..... 219
Gabbii Blake, Transactions Am. Ent. Soc. vii, 1879, 248, ♀..... 247
Gibbosa Say, Boston Journal i, 198, ♂..... 231
Gila Blake, Transactions Am. Ent. Soc. iii, 1871, 250, ♂..... 245
Gorgon Blake, ibid. iii, 1871, 233, ♀..... 210
Gothica Blake, ibid. iii, 1871, 252, ♀..... 250
Grandiceps Blake, ibid. iv, 1872, 74, ♂ ♀..... 244
Hector Blake, ibid. iii, 1871, 237, ♂..... 225
Hispida Blake, ibid. xiii, 1886, 226, ♂ n. sp..... 226
Holotricha Sauss., Ann. Soc. Ent. France series 4, vii, 361, ♀..... 214
Istapa Blake, Transactions Am. Ent. Soc. iii, 1871, 241. ♂..... 233
Isucar Blake, ibid. iii, 1871, 253, ♀..... 251
Laticeps Blake, ibid. iii, 1871, 249, ♂..... 244
Leda Blake, ibid. iv, 1872, 72, ♀..... 216
Lerma Blake, ibid. iii, 1871, 251, ♀..... 248
Luteola Blake, ibid. xiii, 1886, 235, ♀ n. sp..... 235
Luxuriosa Smith, Descriptions of new Hymen. in Brit. Mus. 1879, 224, ♀.. 255
Macerata Blake, Transactions, Am. Ent. Soc. xiii, 1886, 227, ♂ n. sp..... 227
Macilenta Blake, ibid. iii, 1871, 239, ♂..... 231
Macra Cresson, Proceedings Ent. Soc. Phila. iv, 1865, 429, ♂..... 230
Macrocephala Smith, Des. of new Hymen. in Brit. Mus. 1879, 223, ♀..... 256
Magna Cresson, Proceedings Ent. Soc. Phila. iv, 1865, 385, ♀..... 214
Marpesia Blake, Transactions Am. Ent. Soc. vii, 1879, 247, ♀..... 218
Medea Cresson, Proceedings Ent. Soc. Phila. iv, 1865, 432, ♀..... 224
Melancholica Smith, Des. of new Hymen. in Brit. Mus. 1879, 223, ♀..... 255
Melanocoma Blake, Transactions Am. Ent. Soc. iii, 1871, 240, ♀..... 233
Militaris Smith, British Museum Catalogue iii, 61, ♀..... 222
Minutissima Blake, Transactions Am. Ent. Soc. iii, 1871, 254, ♀..... 253
Mixtura Blake, ibid. vii. 1879, 251, ♀..... 234
Mollissima Blake, ibid. xiii, 1886, 215, ♂ ♀ n. sp... 215
Montezumæ St. Fargeau. Hymenoptera iii, 634, ♀..... 232
Monticola Cresson, Proceedings Ent. Soc. Phila. iv, 1865, 430, ♂..... 226
Montivaga Cresson, ibid. iv, 1865, 436, ♀..... 254
Munifica Smith, Descriptions of new Hymen. in Brit. Mus. 1879, 223, ♀... 256
Mutata Blake, Transactions Am. Ent. Soc. iii. 1871, 247, ♀..... 241
Nigriceps Cresson, Proceedings Ent. Soc. Phila. iv, 1865, 110, ♀..... 238

PAGE.
Nortoni Blake, Transactions Am. Ent. Soc. iii, 1871, 68, ♀ 234
Obscura Blake, ibid. iii, 1871, 239, ♂ 231
Occidentalis Linn., Syst. Nat. i, 966; St. Fargeau, Hymen. iii, 595, ♂ ♀ ... 223
Oceola Blake, Transactions Am. Ent. Soc. iii, 1871, 248, ♂ 243
Ochracea Blake, ibid. vii, 1879, 247, ♂ ♀ 228
Orcus Cresson, Proceedings Ent. Soc. Phila. iv, 1865, 428, ♂ ♀. 209
Pacifica Cresson, Transactions Am. Ent. Soc. v, 1874, 120, ♀ 217
Parmosa Blake, ibid. xiii, 1886, 210, ♀ n. sp. 210
Pennsylvanica St. Farg., ibid. iii, 1871, 233, ♂; Hym. iii, 628. 208
Petricola Blake, ibid. iii, 1871, 253, ♀ 252
Phædra Blake, ibid. vii, 1879, 251, ♀ 219
Præclara Blake, ibid. xiii, 1886, 252, ♀ n. sp 252
Proserpina Blake, ibid. iii, 1871, 241, ♀ 233
Psammadroma Blake, ibid. iii, 1871, 254, ♀ 253
Pulchra Smith, British Museum Catalogue iii, 62, ♂ 222
Pygmea Blake, Transactions Am. Ent. Soc. vii, 1879, 250, ♀. 253
Quadridens Blake, ibid. vii, 1879, 247, ♀ 247
Robinsonii Blake, ibid. iii, 1871, 250, ♀ 246
Rubriceps Cresson, Proceedings Ent. Soc. Phila. iv, 1865, 111, ♀ 216
Sackenii Cresson, ibid. iv, 1865, 385, ♀ ♂, Blake. 213
Salutatrix Smith, Descriptions of new Hymen. in Brit. Mus. 1879, 227, ♀ ... 251
Sanbornii Blake, Transactions Am. Ent. Soc. iii, 1871, 248, ♂ 243
Scæva Blake, ibid. iii, 1871, 232, ♂ 207
Scaveola Blake, ibid. iii, 1871, 247, ♀ 241
Separata Smith, Descriptions of new Hymen. in Brit. Mus. 1879, 227, ♀ 257
Sicheliana Sauss., Ann. Soc. Ent. France, series 4, vii, 360, ♀ 217
Simillima Smith, British Museum Catalogue iii, 62, ♀ 254
Solola Blake, Transactions Am. Ent. Soc. iii, 1871, 243, ♀ 236
Sumichrasti Sauss., Ann. Ent. Soc. France, series 4, vii, 357, ♂ ♀ 222
Tecta Cresson, Transactions Am. Ent. Soc. v, 1874, 119, ♀ 216
Texana Blake, ibid. vii, 1879, 250, ♀ 212
Thetis Blake, ibid. xiii, 1886, 214, ♀ n. sp 214
Tisiphone Blake, ibid. vii, 1879, 240, ♀ 210
Toluca Blake, ibid. iii, 1871, 242, ♀ 235
Ulkei Cresson, Proceedings Ent. Soc. Phila. iv, 1865, 387, ♀ 238
Ursula Cresson, Transactions Am. Ent. Soc. v, 1874, 120, ♂ 218
Venifica Blake, ibid. xiii, 1886, 210, ♀ n. sp.. 210
Verticalis Smith, British Museum Catalogue iii, 63, ♀ 221
Vesta Cresson, Proceedings Ent. Soc. Phila. iv, 1865. 436, ♀ 240
Vestita St. Fargeau, Hymenoptera iii, 634, ♂ ♀ 218
Virguncula Blake, Transactions Am. Ent. Soc. xiii, 1886, 253, ♀ n. sp 253
Vulpina Smith, Descriptions of new Hymen. in Brit. Mus. 1879, 225, ♀ 255
Waco Blake, Transactions Am. Ent. Soc. iii, 1871, 238, ♀ 229
Wilsoni Cresson, Proceedings Ent. Soc. Phila. iv, 1865, 112, ♂ 232
Xalapa Blake, Transactions Am. Ent. Soc. iii, 1871, 249, ♂ 245
Xalisco Blake, ibid. iii, 1871, 245, ♀ 237
Zapoteca Blake, ibid. iii, 1871, 250, ♂ 245
Zelaya Blake, ibid. iii, 1871, 234, ♂ 211
Zenobia Blake, ibid. vii, 1879, 250, ♀ 220

PAGE.

PHOTOPSIS Blake.

Abdominalis Blake, Transactions Am. Ent. Soc. xiii, 1886, 275, ♂ n. sp..... 275
Albipes Cresson, ibid. v, 1874, 99, ♂ 268
Alcanor Blake, ibid. iii, 1871, 264, ♂ 267
Ampla Blake, ibid. vii, 1879, 252, ♂ 266
Astyanax Blake, ibid. vii, 1879, 254, ♂ 272
Atrata Blake, ibid. vii, 1879, 253, ♂ 268
Attenuata Blake, ibid. iv, 1872, 76, ♂ 264
Aulus Blake, ibid. iv, 1872, 75, ♂ 270
Belfragei Blake, ibid. iii, 1871, 263, ♂ 263
Bicolor Blake, ibid. vii, 1879, 252, ♂ 271
Castanea Cresson, Proceedings Ent. Soc. Phila. iv, 1865, 338, ♂ 273
Clara Cresson, ibid. iv, 1865, 439, ♂ 262
Concolor Cresson, ibid. iv, 1865, 439, ♂ 265
Contracta Blake, Transactions Am. Ent. Soc. vii, 1879, 253, ♂ 265
Danaus Blake, ibid. iii, 1871, 261, ♂ 261
Ferruginea Blake, ibid. vii, 1879, 254, ♂ 264
Glabrella Cresson, Proceedings Ent. Soc. Phila. iv, 1865, 414, ♂ 274
Hyalina Blake, Transactions Am. Ent. Soc. iii, 1871, 263, ♂ 274
Imperialis Blake, ibid. iii, 1871, 260, ♂ 265
Inconspicuus Blake, ibid. xiii, 1886, 272, ♂ n. sp..... 272
Juxta Blake, ibid. iv, 1872, 76, ♂ 270
Lepidus Blake, ibid. xiii, 1886, 269, ♂ n. sp..... 269
Melaniceps Blake, ibid. xiii, 1886, 264, ♂ n. sp..... 264
Melicausa Blake, ibid. iii, 1871, 261, ♂ 262
Mellipes Blake, ibid. xiii, 1886, 262, ♂ n. sp..... 262
Mendica Blake, ibid. iii, 1871, 259, ♂ 259
Minuta Blake, ibid. iv, 1872, 76, ♂ 272
Nebulosus Blake, ibid. xiii, 1886, 275, ♂ n. sp..... 275
Nitida Cresson, Rep. upon coll. of Hym. in Nev. Utah, Ariz., 1875, p. 710, ♂ .. 267
Nokomis Blake, Transactions Am. Ent. Soc. iii, 1871, 260, ♂ 260
Nubecula Cresson, Proceedings Ent. Soc. Phila. iv, 1865, 440, ♂ 266
Orizaba Blake, Transactions Am. Ent. Soc. iii, 1871, 259, ♂ 260
Pallida Blake, ibid. iii, 1871, 263, ♂ 275
Rustica Blake, ibid. vii, 1879, 252, ♂ 271
Sobrinus Blake, ibid. xiii, 1886, 268, ♂ n. sp..... 268
Tapajos Blake, ibid. iii, 1871, 262, ♂ 269
Triangularis Blake, ibid. iii, 1871, 262, ♂ 263
Unicolor Cresson, Proceedings Ent. Soc. Phila. iv, 1865, 389, ♂ 261
Uro Blake, Transactions Am. Ent. Soc. vii, 1879, 253, ♂ 273
Venustus Blake, ibid. xiii, 1886, 270, ♂ n. sp..... 270

CHYPHOTES Blake.

Elevatus Blake, Transactions Am. Ent. Soc. xiii, 1886, 276, ♀ n. sp..... 276

PAGE.

MYRMOSA Latr.

Rufiventris Blake, Transactions Am. Ent. Soc. vii, 1879, 254, ♂ 278
Unicolor Say, ibid. iii, 1872, 265, ♂, Nar. Expedition St. Peter's River, App., 66..... 278

METHOCA Latr.

Bicolor Say, Boston Journal i, p. 299, ♀ 280
Californica Westw., Proc. of Ent. Soc. of Lond., 1881, p. 133, pl. vii, fig. 1.. 279
Canadensis Smith, British Museum Catalogue, Hym. iii, 67, ♂ 279
Poeyi Guér., Icon. Règ. Anim. Ins. p. 430, ♂ ♀ 279
Stygia Say, Boston Journal i, 299, ♂ (*Tengyra* St. Farg.) 279

ERRATA.

On page 201 for **dubiatta** read **dubitata.**

By an error of the printer **macer,** on page 227, should read **macerata.**

DIPTEROLOGICAL NOTES AND DESCRIPTIONS.

BY S. W. WILLISTON.

LEPTIDÆ.

Symphoromyia pachyceras n. sp.

Male.—Opaque black, first antennal joint very much thickened; wings yellow. Length 5–6 mm.

Antennæ black, first joint very much thickened, bushy black hairy. Face gray pollinose, but mostly concealed; palpi porrect, bushy black pilose. Dorsum of thorax opaque black, with only faint indications of brown stripes and with long black pile; abdomen opaque black, in front and on the sides anteriorly with long yellow pile, posteriorly with black pile. Legs blackish pitchy; tarsi mostly black. Wings with a strong brownish yellow tinge.

Female.—Gray pollinose; dorsum of thorax with three brown stripes; first antennal joint less thickened; wings nearly hyaline. Head densely bluish gray pollinose, the sides of the front brownish; front with black pile. First antennal joint moderately swollen, not bushy pollinose, third black; palpi gray, with short, light colored pile. Occiput below with white pile. Thorax densely bluish gray pollinose, nearly bare; dorsum with three broad brown stripes, the middle one sometimes divided by a line. Abdomen brownish gray pollinose, nearly bare. Legs black, knees narrowly luteous. Wings nearly hyaline, stigma brown.

One male and three females. Northern California. The females differ very much from the male; I believe they belong together, nevertheless.

Symphoromyia plagens n. sp.

Male.—First antennal joint much thickened, third yellowish red; abdomen shining metallescent black; wings brownish clouded; femora black. Length 7 mm.

First antennal joint much thickened and bushy black hairy, black, gray pollinose; third joint yellowish red, reniform, arista black. Face thickly gray pollinose; palpi cylindrical, porrect, bushy black pilose. Dorsum of thorax black, scarcely shining, with grayish pollen and long black pile. Abdomen shining metallescent black, on the sides and in front with long yellow pile, posteriorly with more or less black pile. Legs black, with black pile, the tip of femora, the tibiæ and tarsi luteous, the distal part of the last blackish. Wings with a brown tinge, strongest near the middle. Knobs of halteres brown.

Two specimens, Washington and Mt. Hood, Oregon.

ASILIDÆ.

Ceraturgus nigripes n. sp.

Male.—Abdomen with golden pollinose posterior cross-bands; legs black. Length 14 mm.

Antennæ in structure like those of *C. cruciatus*, the style somewhat shorter: black, the first joint bushy black hairy, the second joint less so. Face projecting a little more below than in *C. cruciatus;* densely light golden yellow pollinose, and with long, soft, rather abundant light yellow pile below, extending up more thinly in the middle; occiput below with silky white hair; above, the occipito-orbital hairs are black, longer and more abundant than in *C. cruciatus*; front shining black, with black hair, except some yellowish ones on the ocelligerous tubercle, the orbits narrowly golden pollinose. Dorsum of thorax thickly golden pollinose, leaving two not very broad, median, brownish black stripes, separated by a line, and on each side two large, oval, black spots narrowly separated by a sutural line; pile or hair rather long and erect, on the front part yellowish white, broadly behind black, the bristly hairs of the post-alar callosities and the scutellum light yellow; pleuræ thickly light yellow pollinose, below and on the coxæ more grayish. Abdomen in shape like that of *C. cruciatus*, with short, but abundant, erect light yellow pile; each segment with an opaque, light golden yellow posterior cross band, composed of dense pollen, moderately narrowed on the sides; that on the first segment narrowest, that on the second comprising about one-half the segment, on the last leaving only a slender anterior black band. Legs pitchy black, the tibiæ and tarsi fulvous pubescent; pile of the coxæ, especially the front ones, and of the femora below, long and silky white. Wings nearly pure hyaline; neuration as in *C. cruciatus*.

One specimen, Georgia. The thorax and abdomen in shape and markings are singularly like those of *Laparus pictitarsis* Bigot. The "*pedes flavi*" prevents the identification with the long-lost *C. aurulentus* Fabr.

Myelaphus lobicornis O. Sacken. Western Dipt. 287; Williston, Trans. Am. Ent. Soc. xi, 7; xii, 53.

Either there is a number of closely allied species, or else a considerable variation in the one. The fourth posterior cell is in some cases wide open, in others narrowed, while in yet others it may be closed and petiolate. I have seen a specimen (♂) from California in which the abdomen is wholly black, the femora at the base blackish and the tip of the tibiæ and all the tarsi black. The fourth posterior cell is closed in the margin; otherwise, the specimen is quite like the one I first described.

Myelaphus rufus Williston, Trans. Am. Ent. Soc. xi, 7.

I have seen a male of this species in which the wings, as I suspected, are wholly blackish, except the very base. The fourth posterior cell is closed in the margin and the second joint of the antennæ is reddish.

Dioctria pusio O. Sacken, Western Dipt. 288.

A male specimen from Colorado I refer to this species. The coxæ are yellow, the tip of the hind tibiæ considerably incrassated and the

slender abdomen has the third and following segments broadly blue-black on the disk of each, the margins yellowish red, the seventh almost wholly, the hypopygium entirely so. The four front tarsi are also brownish, except the base.

Stenopogon sacidinus n. sp.

Male.—Black; abdomen, except base and hypopygium, yellowish red; wings black; mystax white. Length 14–15 mm.

Like species of *Osprioceras*, but the antennæ with a distinct terminal style. Face wholly densely grayish white pollinose, the bristles of the mystax white: frontal and occipito-orbital bristles black, beard and long hair of the anterior coxæ white. Dorsum of thorax moderately shining, brownish black, on the sides grayish or brownish yellowish pollinose, behind and on the scutellum less thickly so, in the middle with not very noticeable stripes. Abdomen slender, yellowish red, the first, second, and anterior angles of the third segment and the hypopygium black. Legs black, the front femora more or less, the front and middle tibiæ and tarsi pitchy or reddish. Wings black.

This species has a very different aspect from other *Stenopogones*, but the presence of a well-developed cylindrical antennal style, prevents its location among the *Osprioceri*. It differs from the known species of *Osprioceras* also in the possession of long white hair on the anterior coxæ.

Three specimens, Kansas Plains; taken in a grassy ravine, Aug. 20.

Stichopogon trifasciatus Say, Jour. Acad. Phil. iii, 51, 3; Compl. Wr. ii, 64 (*Dasypogon*); *Thereva plagiata* (Harris) Walker, List, etc., i, 223; *Dasypogon candidus* Macquart, Dipt. Exot. 1er Suppl. 67, 48; Bellardi, Saggio, etc., ii, 78 (*Stichopogon*); *Dasypogon galascens* Walker, Trans. Ent. Soc. N. S. v, 277 [Bellardi]; *Dasypogon fasciventris* Macquart, Dipt. Exot. 4e Suppl. 69, 75, pl. vi, fig. 13 [Bigot].

I have compared specimens of this species from New England, Kansas and Southern California and find no differences. I believe the synonymy above may be safely accepted.

Triclis tagax Williston, Trans. Am. Ent. Soc. xi, 8.

A male specimen of this species, received without locality, differs in having the pollinose bands of the abdomen confined to a spot on the hind angles of the segments; the last two segments red on the hind margins. On each side of the front margin of the dorsum of the thorax there is a large light brown pollinose spot extending back narrowly above the dorso-pleural suture.

Saropogon n. sp.

I have specimens of a species of this genus (California) with widely open fourth posterior cell, of which the abdomen is as slender as that

of the most slender species of *Deromyia* known to me. Species with this cell widely open belong here, and those with it petiolate with *Deromyia;* but, as an actual fact, not a few species will be found in which this character is variable; indeed, my specimens of *S. adustus* and *combustus* have the cell closed; there is absolutely no discovered character that will separate the genera. Still, the multitude of species (I have seen more than thirty, chiefly from the United States) of *Deromyia* renders its retention almost imperative.

Laphria pubescens Williston, Trans. Am. Ent. Soc. xi, 32.

I have seen specimens of this species, collected by Mr. Morrison, bearing the label "White Mountains."

Atomosia (Atractia) Mikii n. sp.

Male.—Black, shining, white pilose; middle tibiæ slender, with long bristles, at the tip dilated and black pilose; wings cinereous hyaline. Length 6 mm.

Front, face and occiput clothed with whitish gray pollen; on the lower part of the face with a silvery reflection; beard and thin pile of the face silky white; mystax not abundant, soft, white. Antennæ black; first two joints of equal length, short, with black bristles; third joint elongate, of nearly equal width throughout, truncated at tip, and provided with a slender style, about a third as long as the joint. Dorsum of the thorax and scutellum shining, with silvery pubescence, the bristles black. Pleuræ densely white pollinose, with a shining black spot on the mesopleuræ, the trichostical bristles white; tegulæ yellow. Abdomen black, shining, finely punctulate, the pubescence or short pile on the posterior angles and borders white. Legs black, the tarsi largely reddish; all the tibiæ and tarsi with long, chiefly black bristles, on the outer side of the middle pair with two very long and two shorter ones; the middle tibiæ are slender to near the tip, where they are dilated and provided on the outer side with a tuft of black pile; the middle metatarsi slender on the basal part, with a small tuberosity near the base below; hind tibiæ on the inner side with short, white and thick pile, as in *Dioctria*. Wings a little clouded; first posterior cell not coarctate.

Hab.—San Domingo.

This species differs distinctly from the three known South American ones of *Atractia* in the pubescence, scutellum, legs, etc. The peculiar structure of the middle legs in the present species is not mentioned in any, though it is probably a sexual character, and the sex is not given by either Wiedemann or Schiner; nor can I tell of which sex my specimens are, though I think they are males. So far as the location of the genus is concerned, I object to placing it among the *Asilinæ*. My species is an *Atomosia* with a terminal antennal style, and must be placed in the immediate vicinity of that genus. I take much pleasure in dedicating this species to the distinguished Austrian

dipterologist, Professor Mik. Schiner speaks of a "Griffel" in the South American *Atomosia cyclocera* Sch. (Nov. Exped. 170) and in his description of *A. argyrophora* he says the species is quite like an *Atractia*, save in the structure of the antennæ, so that it is difficult to say what the genus *Atractia* really is.

MIDASIDÆ.

Leptomidas pantherinus Gerstæcker, Stett. Ent. Zeit. 1868, 85; Osten Sacken, Western Dipt. 280.

The male of this species differs very much from the female in coloration, and, had I not received specimens collected together, I would have believed them specifically different. In the male the head, thorax and antennæ are black, the pile is longer and more abundant, and the constriction of the basal part of the lamella is less evident, the black bands of the abdomen are broader and the hind femora are sometimes largely blackish. The knob of the halteres in the female is brown; in the male black.

Four specimens, Washington, California.

Midas inteipennis Loew, vii, 23.

I have seen specimens of this species from Arizona (Professor Comstock, No. 148).

Midas militaris Gerstæcker, Stett, Ent. Zeit. 1868; *M. vittatus* Macquart (non Wiedemann), Dipt. Exot. 4e Suppl. 60, pl. iv, fig. 6; Bellardi, Saggio, etc. ii, 7 (id.)

A number of specimens (Professor Comstock, No. 149) from Ariz., evidently of this species, show a considerable variation in coloration. The lamella is sometimes red, the thorax varies from a coffee-black to a red. The black spot on the sides of the abdominal segments is sometimes wanting, and the venter and legs vary from red to nearly black.

Midas scitulus n. sp.

Male.—Black, abdomen with yellow bands; lamella of antennæ elongate; wings nearly hyaline, brown along the costa. Length 15 mm.

Antennæ black; lamella considerably longer than the first three joints together, broadest at the base, sinuate, and then gently tapering to near the tip. Head black; face broad, below and the oral margin deep red; pile short, not abundant, white. Dorsum of thorax opaque black, nearly bare; the lateral margins, humeri, post-alar callosities, scutellum and metanotum dark yellowish or brownish red; pleuræ shining, more or less pitchy red. Abdomen shining bluish black, with a yellow and reddish yellow posterior cross band on each segment; the anterior angles, extending narrowly across the front part of the anterior segments, reddish

yellow. Venter yellow fasciate at the incisures. Legs dark pitchy black, the hind pair more reddish; hind femora considerably thickened on outer part, more slender and arcuate toward the base, below with short spines; hind tibiæ straight, produced into a small spur below. Wings nearly hyaline, with dark veins, narrowly clouded with brown along the costa.

One specimen, Arizona (Professor Comstock, No. 152).

Ectypus limbatus n. sp.

Female.—Clay yellow; thorax reddish; veins of the wings clouded with brown; abdomen light-yellow fasciate. Length 22 mm.

Antennæ orange-red, the third joint, except its base, blackish; lamella shorter than the third joint, tapering on the middle to the base. Head red, in the middle of the front blackish; the sides of the front, the face, and the posterior orbits thickly light yellowish gray pollinose; pile sparse, silky white; proboscis short, blackish, labellæ broad. Thorax opaque reddish cinnamon-brown, the humeri and pleuræ more yellowish; dorsum with two stripes of sparse white pubescence: just above and below the dorso-pleural suture two spots of whitish pollen and another on the sterno-pleuræ. Abdomen luteous yellow, shining, the first four segments with a rather broad posterior light yellow margin; terminal segments cylindrical, the ovipositor with about twelve short rays; legs yellow throughout; hind femora elongate, only slightly thickened, gently arcuate, with two rows of spines below; hind tibiæ straight, not produced into a spur at the tip. Wings with broad, dark brown clouds on the veins.

One specimen, Arizona (Professor Comstock, No. 149). This species agrees throughout in its general characters with the description and figures given by Gerstæcker (Stett. Ent. Zeit. 1868) of his genus *Ectypus*, and, so far as the female characters indicate, evidently belongs to this genus. The type and only other known species of the genus, so far as I am aware, is *E. pinguis* Gerst., from Africa.

NEMESTRINIDÆ.

Hirmoneura flavipes n. sp.

Female.—Black, thickly pollinose; antennæ and legs yellowish; wings nearly hyaline, narrowly luteous in front; two submarginal cells, both open, fourth posterior only closed. Length, with ovipositor, 15 mm.; without, 13 mm.

Eyes bare, large, their inner borders nearly parallel, the face a little narrowed below. Front narrow, only a little wider below, a little shining, with grayish pollen and black pile; most projecting above the base of the antennæ, thence receding to the oral margin; above, on each side of the ocelli, deeply excised. Antennæ situated below the middle of the head in profile, short, joints of nearly equal length, the third cordate; pile of basal joints yellow and blackish; face narrowly and deeply grooved on each side near the eye, in which grooves the slender, cylindrical, yellow palpi are closely lodged, reaching nearly to the antennæ; face with sparse yellowish pile, but that of the palpi longer, blackish; proboscis short. Thorax black, but mostly concealed beneath uniform, thick, grayish brownish dust; pile erect, moderately abundant, not long, lutescent yellowish. Pleuræ, pectus, and venter thickly covered with light gray pollen, the

pile whitish. Abdomen like the dorsum of the thorax; at the base, with yellowish pile, beyond with a short, reclining, sparse black hairs; a narrow band at the base of the second segment, gray pollinose, beyond it a broader brown band; ovipositor directed backward, composed of five segments, their entire length about equal to that of the two preceding segments together, forming a tapering continuation of the abdomen, the last one elongate, reddish, and split nearly to its base. Legs light yellow, the tip of four anterior tarsi, the tip of hind femora and the rest of the hind legs reddish.

The thorax, abdomen and wing-neuration are like those of *Trichophthalmia Novæ Hollangæ* Macquart, as figured in pl. ii, fig. 7, Dipt. Exot. ii, 1. The last segment of the ovipositor is not as long. I described the eyes as bare, but, by looking across the under part with a good lens, a few scattering hairs are visible, and it is possible that in the male they may be more distinctly pubescent. This is the fourth species of this family now recorded from North of Mexico, viz., *Hirmoneura* (*Parasymmictus*) *clausa* O. S., *H. flavipes*, *Rhynchocephalus Sackenii* Will., and *R. volaticus* Will. In my description of the last species I should have described the "black" pile of the abdomen as dark chocolate-brown, and the "white" tomentum as glistening light yellow.

THEREVIDÆ

Thereva vialis O. Sacken, Western Dipt. 274.

I have several specimens of this species from Washington Territory. In some the blackish bristles of the vertex and front are wanting; in others the pile of the thoracic dorsum is in large part black. A female with them, and which seems to be of the same species, differs in having the pollen above more brownish, and is as usual less pilose; it is most especially characterized, however, by the presence of two large, round, deep velvet-black spots on the front

Thereva crassicornis n. sp.

Male.—Black, white pollinose and pilose; the thickened first antennal joint thickly black hairy above; vertex and thoracic dorsum black pilose; front bare; wings hyaline, stigma and narrow clouds of the discal veins brown. Length 9–10 mm.

Eyes separated only by a sutural space, front bare of pile. Antennæ black, the first joint pollinose, above with long black hair and bristles, below with black bristles and white pile. Head below densely white pilose and with sparse black hairs; occipito-orbital bristly hairs black. Dorsum of thorax in the middle with three slender pollinose stripes, enclosing two opaque dark ones; on the sides blackish and pollinose; pile black. Pleuræ thickly white pollinose and pilose. Abdomen thickly white pollinose and with recumbent, moderately long, white pile. Femora black, white pilose, tibiæ luteous yellow, their tip black;

tarsi luteous yellow at the base, black distally. Wings cinereous hyaline, the stigma brown, the veins of the disk narrowly clouded with brown; fourth posterior cell open.

Female.—Front narrow above, short black pilose across the middle, below which there is a narrow white pollinose cross band; no black hairs visible on the under side of the head. Abdomen nearly bare, thickly grayish white pollinose, leaving a large dark brown, semi-oval, basal cross band on the second segment and similar, successively smaller ones, on the next two segments.

Hab.—California.

This species, with *T. melanophleba* Loew, forms a connection with the genus *Tabuda*. From Loew's species it will be distinguished by the bare front in the male; in the female by the abdominal markings, and the absence of black abdominal pile.

CYRTIDÆ.

Acrocera lituratа n. sp.

Male.—Yellow; three broad, dorsal, thoracic stripes, pectus and tip of tarsi black; abdomen with irregular brown fasciæ. Length 3 mm.

Vertical triangle and occiput black, the latter pollinose. Dorsum of thorax honey-yellow, the humeri and post-alar callosities yellowish white, in the middle with a broad black stripe, attenuated behind, and on each side a large elongate spot or stripe. Pleuræ dark; pectus black. Scutellum black above, the margin broadly honey-yellow. Tegulæ white. Abdomen yellow, translucent, the second and third segments on the sides brown, connected by a basal fascia, narrower on the third, dilated triangularly in the middle; fourth segment with a median, basal, subtriangular or T-shaped spot. Venter brown in the middle. Legs yellowish white, the tip of all the tarsi and claws black. Wings hyaline, veins yellowish.

Hab.—Washington.

Lasia Kletii O. Sacken, Wheeler's Reports, vol. v, Zool. 804.

Two specimens of this beautiful large Cyrtid from New Mexico are easily recognizable. The species is almost entirely bare, the sparse, short, black and light colored hairs on the dorsum of the thorax are hardly discernible. In the South American species of this genus, so far as I can learn, there is always a considerable vestiture; this fact, together with the termination of the second vein in the first, renders its location in this genus a little doubtful. I can see scarcely any golden reflections in my specimens, but, on the contrary, a pronounced blue or violet reflection, almost obscuring the green of the abdomen of one. The stumps of vein on the anterior branch of the third vein and near the tip of the fourth are wanting.

Oensa heluo O. Sacken, Western Dipt. 276.

I have a specimen of this species agreeing with the description, except that the outer first posterior cell is but slightly coarctate, not closed and petiolate.

Pterodontia misella O. Sacken, Western Dipt. 277.

I have several specimens of this species from Washington varying from six to nine millimetres in length. The black markings of the abdomen vary in extent, and, from comparison with Eastern specimens (*P. flavipes* Gray ?), I can find no constant difference, and believe them to be the same.

DOLICHOPIDÆ.

Plagioneurus univittatus Loew, Wien. Ent. Monatschr. i, 43; Neue Beitr. viii, 69; Monogr. ii, 196, pl. vi, fig. 36.

A single male specimen of this species from San Domingo agrees well with the descriptions of the author. The genus was founded on female specimens, and hitherto the male—so important in the generic definitions of this family—has been unknown. The generic characters apply very well, except that the face is a little less broad. The author, however, was very much mistaken in supposing that "the peculiarities of the female seem to indicate that the hypopygium of the male is disengaged." In reality the sexual apparatus is almost completely hidden.

PIPUNCULIDÆ.

Pipunculus opacus n. sp.

Female.—Black, abdomen narrowly gray fasciate; face white; legs chiefly black; thorax with bristles; fourth longitudinal vein with a stump, cross-vein near middle of discal cell, stigma small. Length 6 mm.

Front below and the face silvery white; front elsewhere black, grayish pollinose. Antennæ black, third joint large, reniform, silvery on the front and inner side. Dorsum of thorax and scutellum black, apparently gray pollinose, with black pile, and on the post-alar callosities and scutellum with black bristles. Pleuræ pollinose. Abdomen depressed, opaque black, the posterior margin of the segments narrowly, and the sides, gray pollinose; along the sides in front with light yellow, behind with black pile. Legs black, femora gray pollinose; tip of femora, base and tip of tibiæ, and all the tarsi, yellowish red, the tip of the last brown, with bristly hairs; pulvilli large, yellowish white. Front, and especially the middle, femora behind with white pile, hind femora and tibiæ without with fine bristly hairs. Wings nearly hyaline, stigma small, brown; anterior cross-vein near middle of discal cell, last section of fourth vein angulated and with a stump.

One specimen, Washington Territory. The presence of bristles and pile, the shape of the abdomen and the neuration, all are sufficient to justify the erection of a new genus. *P. auctus* and *modestus* seem to be related, European, species.

MUSCIDÆ CALYPTRATÆ

Hyalomyia æneoventris n. sp.

Male.—Black, abdomen metallic coppery bronze, margined with white pollen; wings broadly brown anteriorly near the middle; thorax not vittate. Length 6 mm.

Front narrow below the ocelli, with a slender, opaque, black stripe, filling out the front above, a little dilated below, the triangular frontal part lightly pollinose on the sides, clothed with black hair and bristles. Antennæ black, the third joint a little longer than broad. Face and cheeks white pollinose. Dorsum of thorax black, but little shining, faintly pollinose, except, when seen obliquely from behind, there appear an irregular white cross-band before the suture and more or less silvery pollen in front of the scutellum; clothed with black pile. Abdomen broadly oval, depressed, shining dark metallic coppery bronze, less so near the base; the third, fourth and fifth segments, in well-preserved specimens, conspicuously margined with snowy white pollen; the short hair black, near the tip with some fine bristles. Legs, black, pulvilli brown. Wings in the middle broadly brown, the distal part, and behind the fifth vein, subhyaline, the base brownish yellow.

Four specimens, Washington Territory. A female specimen with these, that may possibly be the same, is larger, the third antennal joint smaller, the eyes nearly contiguous below the ocelli, the abdomen less shining metallic, and the distal part wholly lightly pollinose, except a narrow, median, indistinct stripe (when viewed from behind the pollen and stripe much more distinct). The wings differ very distinctly in being hyaline, with the base and basal veins yellow.

This genus seems to be well represented on the Pacific coast. I have three other species not well enough preserved for description. One is larger (7 mm.) with broader front, red antennæ, and with considerable red on abdomen. The others are small (3 and 4 mm.) and resemble the female mentioned above. The wings in all are nearly hyaline.

Cistogaster divisa Loew, Centur. iv, 78; *Gymnosoma occidua* Walker, List, etc., iv, 692.

Walker's species seems only to be the female of Loew's male. It differs very much from the male, as the females of this genus and of *Gymnosoma* usually do; I have taken them in numbers in Connecticut. The head is white, only faintly yellowish on the sides of the frontal stripe; the dorsum of the thorax is shining black, with three broad white pollinose stripes; the abdomen black, with a median pollinose stripe, and two pollinose cross-bands, the fourth segment chiefly pollinose; the first and second segments are rarely red on the sides. The male sometimes has the black markings of the abdomen much

less in extent or even wholly wanting, except the basal spot. Males from Kansas, Colorado and California I cannot distinguish, though the abdomen more frequently has less or no black.

Hemyda sp.

The type species of this genus, *H. aurata* R. Desvoidy, has been recognized by Mr. V. v. Roeder (Berl. Ent. Zeitschr. xxv, 212) among specimens from Missouri. I have a specimen from Washington Territory that may be the same. The genus is very distinct from *Ocyptera* in the open first posterior cell, the very long third antennal joint, and the thickened large hypopygium folded beneath the abdomen. My specimen has a very glossy silvery golden face, black antennæ, elongate-oval bright shining black frontal stripe, a broad light yellow, translucent, interrupted band on the second abdominal segment, much broader and complete on the venter, and a narrow, interrupted, basal, dorsal band on the third. Legs yellow, the distal half of hind femora, the four front femora in front, and all the tarsi black. Length 9 mm. The genus *Ancyclogaster* Bigot (Bull. Soc. Ent. Fr. 1884, 95), seems to be closely allied.

Dejeania corpulenta Wiedemann, Auss. Zw. ii, 280; Schiner, Novara Exped. 337; *D. rufipalpis* Macquart, ii, 3, 35, 5, pl. iii, fig. 1; *D. vexatrix* O. Sacken, West. Dipt. 343.

Hab.—Colorado, New Mexico, Arizona, Mexico, South America.

A very common and striking species.

D. rutilloides Jaennicke, Neue Exot Dipt. 137.

Hab.—New Mexico, Colorado, California, Mexico.

The female has the front tarsal joints two-four very much dilated.

D. hystricosa n. sp.

♂ ♀.—Head, scutellum, and abdomen yellow, distal part of abdomen testaceous. Length 13–14mm.

Head whitish yellow, the ground color of the sides of the front black, but nearly concealed beneath yellowish pollen; frontal stripe ochraceous or reddish. Antennæ brown or black, the second joint and base of third on the inner side more or less yellowish. Proboscis black, palpi yellow, projecting a third or a half beyond the oral margin. Thorax black; the humeri, sides, and posterior part of the dorsum obscure yellow, dorsum rather thinly yellowish grayish dusted, when seen from behind more thickly so, and with three slender stripes anteriorly. Scutellum somewhat obscure yellow, with strong spines. Abdomen reddish yellow, the distal part more or less broadly testaceous; with stout black spines, the sides broadly bare in front, in the middle occupying the whole length of the segment, but not in the shape of a shallow V. Legs black; tibiæ yellowish or brownish red, front tarsal joints of the female only a little dilated. Wings as in *D. corpulenta*.

Twenty-five specimens, Washington, New Mexico, Arizona.

Hystricia ambigua Macquart, Dipt. Exot. 4e Suppl. 172, 9.

Hab.—Colorado, Mexico.

Four specimens agree sufficiently well with Macquart's description, except that the third antennal joint is very distinctly longer than the second; the front femora are broadly pollinose behind.

Hystricia abrupta Wiedemann, Auss. Zw. 293, 22 (*Tachina*): *H. testacea* Macquart, Dipt. Exot. ii, 3, 44, pl. iv, fig. 4; *Tachina vivida* Harris, Ins. New England, 3d ed. 612, pl. v. iii, fig. 1; *Tachina finitima* Walker, List, etc., iv, 70.

Hab.—New England, Washington, Nova Scotia, Mexico.

The identity of Wiedemann's species seems sufficiently evident.

Hystricia soror n. sp.

Female.—Black, scutellum dark red, palpi yellow; second joint of the antennæ short, third long and broad, convex in front. Length 10 mm.

Eyes densely lutescent pilose. Front with two rows of bristles, the inner one extending only a little ways on the face. Occiput with black hair and white pile. Face thickly covered with light gray pollen, less thick on the sides of the front. Antennæ black, first two joints as in *H. abrupta*, the third about four times as long as the second, reaching nearly to the bottom of the face, broad, convex in front. Thorax light grayish pollinose, the dorsum with the beginning of slender stripes in front; scutellum, except the base, deep red, thickly beset with spines. Abdomen deep black, shining, wholly and densely beset, except the first segment, with stout black spines; venter in the middle thickly clothed with similar spines. Legs black, the tibiæ faintly reddish; distal front tarsal joints disciform. Wings nearly hyaline.

One specimen, Arizona. I would have identified this with the South American *H. nigriventris* Macquart (Dipt. Exot. ii, 3, 44, pl. iv, fig. 3), except for the "ailes d'un brunâtre foncé."

Jurinia algens Wiedemann, Auss. Zw. ii, 285, 8 (*Tachina*).

An examination of a considerable number of specimens that may be included under this species discloses differences perhaps specific. I give them briefly.

a. ♂.—Epistoma moderately projecting, palpi slender, antennæ black, third joint two-thirds as long as the second, rounded on the angles below and moderately dilated; front broad.

Three specimens, Massachusetts, Minnesota, Montana.

b. ♂.—Front distinctly narrower, second joint of antennæ usually red; palpi slender or a little dilated.

Ten specimens, New Hampshire, Connecticut, Pennsylvania, Oregon, Wyoming.

c. ♂.—Epistoma more projecting; antennæ black, the second joint reddish at the end, third joint very much dilated, nearly equilaterally triangular, the anterior angle projecting, the posterior rounded, two basal joints of arista elongate. Front broader than in *b*.

Three specimens, North Park, Colorado. This is certainly distinct, and probably is *J. nitida* v. d. Wulp. (Notes from the Leyden Museum, iv, 82).

In numerous females from most of these localities the palpi seem to be uniformly more, the third antennal joint less dilated. The front tarsal joints are considerably dilated; in the male these joints are angular. In the females from North Park, Colorado, the third antennal joint is truncate, angular, but less dilated than in the males; the aristal joints are likewise elongate, and the epistoma more prominent.

Jurinia (Fabricia) hystrix Fabricius, Syst. Entom. 777, 21 (*Musca*); Ent. Syst. iv, 325, 55 (*id.*); Syst. Antl. 310, 8 (*Tachina*); Wiedemann, Auss. Zw. ii, 283, 6; Macquart, Hist. Nat. Dipt. ii, 79, 30 (*Echinomyia*); *Jurinia metallica* R. Desvoidy, Myod. 35.

Specimens that I identify as this are all larger than the size given by Wiedemann, reaching a length of as many as seventeen millimetres. In the material I have I distinguish three forms or species, as follows:

a. ♂.—Front with a single row of bristles on each side reaching below the base of the antennæ. (A few smaller bristles without below, and within above, in both sexes, are not considered as forming a distinct row.) Third joint of the antennæ a little longer than the second; palpi yellow.

♀.—Front with a single row of bristles extending below the base of antennæ, and exteriorly with two strong anteriorly directed ones. Front tarsal joints very much dilated.

Hab.—Connecticut, New York, Florida, Colorado, New Mexico.

The antennæ vary much in color and the third joint appears to be usually smaller in the female.

b. ♂.—Front much narrower, antennæ black, the third joint smaller, not longer than the second, palpi more blackish.

One specimen, North Carolina.

c. ♀.—Like the females of *a*, but the front tarsal joints not dilated. The claws, pulvilli and bristles of the front are as in the other females.

One specimen, Connecticut.

This specimen would seem to be related to the genus *Mikia* Kowarz, and must resemble *M. magnifica* Mik. The second joint of the antennæ is, however, more slender.

All the above mentioned specimens agree in having a row of stout spines on the posterior borders of the second and third abdominal segments.

Jurinia (Fabricia) hystricoides n. sp.

♂ ♀.—Like *J. hystrix* (*a*), but the third antennal joint comparatively larger and longer, the second abdominal segment with only two median posterior spines and the front tarsal joints of the female not dilated. Length 14–17 mm.

The third joint of the antennæ is about twice as long as the second, the frontal stripe is broader and more noticeable, the epistoma less projecting than in *J. hystrix*, and the abdomen does not have the thickened and rigid spines characteristic of that species, but has more slender and less numerous ones; where, in *hystrix*, the second segment has a row of ten to fifteen stout spines in the middle behind, the present species has but two smaller ones, and only about twelve in the hind border of the third. Most especially, however, does the female differ in not having the front tarsal joints at all dilated. The species or form that I have called *c* under *hystrix* occupies a singular middle position between the two in this respect.

Hab.—Connecticut, District of Columbia, Virginia, Georgia, New Mexico, Arizona.

A specimen from California is more deeply black, the antennæ lighter, the abdomen with a bluish reflection.

Jurinia lateralis Macquart, Dipt. Exot. ii, 3, 42, 8, pl. iii, fig 10.

Ten male specimens from New Mexico agree very well with the description of this species.

Jurinia smaragdina Macquart, Dipt. Exot. ii, 3, 39, 2, pl. iii, fig. 6; ? *J. amethystina*, ibid. 42, 9, pl. iii, fig. 7.

♂ ♀.—Tegulæ nearly white; third joint of the antennæ longer than the second, convex in front; thorax dusted, deep greenish blue-black; abdomen deep shining black with greenish reflections; second and third segments without median anterior bristles. Length 12–15 mm.

Antennæ red, third joint a half longer than the second, strongly convex in front, largely black. Dorsum of thorax with a distinct greenish bluish reflection, when seen from behind rather thickly pollinose and with two distinct slender stripes in front. The abdomen deep shining, but the green or blue reflection or color not so evident.

This species is given by Macquart with the habitat "Bresil?" but his description applies so fairly well that the name may be provisionally accepted for our species. The length of the antennal joints prevents the acceptance of *J. amythystina* Macquart, and the color of the tegulæ of *J. virginiensis* Macquart.

Jurinia apicifera Walker, List, etc., iv, 718.

♂ ♀.—Second joint of antennæ reddish yellow, but little shorter than the anteriorly convex third. Thorax shining brassy, but partly concealed beneath yellowish pollen. Abdomen shining metallescent black; no anterior median bristles on the second and third segments; extreme tip and hypopygium frequently red. Legs black; front female tarsi moderately dilated; front femora pollinose behind. Wings lightly brownish, yellowish at the base. Tegulæ nearly white. Length 12–14 mm.

Very common, Massachusetts, Connecticut, New Hampshire, New York, Pennsylvania, Virginia, North Carolina, Georgia, Nebraska, New Mexico, Arizona.

This seems to be Walker's species, but it is very probable that it has been described under other names. Specimens from San Domingo I cannot distinguish; the dorsum of the thorax seems a little less metallic.

Jurinia decisa Walker, List, etc., iv, 715.

Specimens that I identify as this I have from New Hampshire, Connecticut, Virginia, Colorado and New Mexico. The antennæ vary in coloration. The small, but conspicuous, brown spot on the anterior cross vein, dark tegulæ, and the third joint of the antennæ being broader near the end, with the deep red abdomen, will render this species recognizable.

Echinomyia (Peleteria) hæmorrhoa v. d. Wulp, Tijdschr. v. Ent. (2) ii, 145, pl. iv, figs. 13–16; ? *Tachina anaxias* Walker, List, etc., iv, 726; ? *E. analis* Macquart, Dipt. Exot. 1er Suppl. 144, pl. xii, fig. 3*a*.

A number of specimens from the White Mountains agree sufficiently closely with Wulp's description; only one of the two rows of frontal bristles, however, reaches "tot even onder den sprietwortel." In the male the third antennal joint is larger, as long as the second, the abdomen red on the sides, and the fourth segment frequently in large part black. The front tarsi of the female are dilated. A female from Washington does not seem to differ.

Echinomyia (Peleteria) iterans Walker, List, etc., iv, 727; ? *Tachina punctifera* Walker, List, etc., iv, 728.

Numerous specimens from New England. The black of the abdomen varies from small triangular spots to a subinterrupted median stripe. There are one or two Western species resembling this in the markings of the abdomen, but are apparently distinct. An *Echinomyia* (sens. str., *i. e.*, without lateral facial bristles) from California also has the abdomen marked similarly.

Echinomyia (Peleteria) filipalpis Thomson, Eugenies Eesa, 517.

Male.—Second joint of antennæ reddish yellow, third as long or longer, black, subcordate; palpi yellow. Abdomen dark red, first segment, except lateral posterior borders, and a broad median stripe reaching to tip of abdomen, black; second, third, and fourth segments broadly fasciate with grayish pollen; tibiæ chiefly dark reddish. Length 10–12 mm.

Female.—Third joint of antennæ smaller; first abdominal segment at the base, second segment at the middle and a spot exteriorly behind, third segment with a broad posterior band, fourth with a median stripe, black; front tarsal joints dilated.

Ten males and four females, Washington, California, New Mexico.

This name is preoccupied by Rondani for a South American species, and may be changed to *E. Thomsoni*.

Gymnochæta alcedo Loew, Centur. viii, 61.

I refer a female specimen from Connecticut to this species, though I hardly understand what is meant by the "tomentum" of the face and humeri. There are minute spinules on the costa, otherwise the description applies well. A male from Wyoming seems to be the same; the palpi, however, are blacker, and there are distinct spinules at the tip of the auxiliary vein.

Gymnochæta vivida n. sp.

Female.—Sides of the front with a double row of bristles below. Antennæ and palpi black. Second and third abdominal segments each with three pairs of median bristles. Length 13 mm.

Bright metallic green, with violaceous reflections. Face and the posterior orbits below with a gray satiny lustre; lower part of the face and the cheeks in ground-color red; occiput, posterior part of the cheeks, and the sides of the front, shining. Front with an opaque dark reddish-brown stripe, moderately broadened in front, pollinose when seen obliquely; hair of the occiput black and yellow. Antennæ black, third joint a half longer than the second. Orbits above with two strong bristles, directed forward. Thorax scarcely dusted on the humeri and sides. Tegulæ white. Legs black, femora greenish. Wings cinereous hyaline; a stump of a vein on first posterior cell; costa with two spinules at tip of auxiliary vein, the last section of the fourth vein more oblique than in *G. alcedo*.

One specimen, Pennsylvania.

Gymnochæta ruficornis n. sp.

Female.—Antennæ wholly light red, the third joint broader and proportionally a little longer; palpi reddish yellow; frontal stripe broadened in front; a single row of bristles on the sides of the front near base of antennæ; spinules at tip of auxiliary vein obsolete or wanting; no stump of a vein on the first posterior cell; otherwise like *G. vivida*. Length 12 mm.

One specimen, Pennsylvania.

Belvoisia bifasciata Fabricius, Syst. Ent. 177, 18 (*Musca*); Wiedemann, Auss. Zw. ii, 305, 44 (*Tachina*); Macquart, Hist. Nat. Dipt. ii, 114, 19 (*Nemoræa*); Robineau Desvoidy, Myod. 104, 1 (*Latreillia*); Macquart, Dipt. Exot. ii, 3, 57, 1, pl. 6, fig. 2*a*; v. d. Wulp, Tijdschr. v. Ent. xxvi, 24.

Hab.—Atlantic States, Minnesota, Washington, South America.

The third joint of the antennæ is at least three times as long as the second. The front of the female is considerably broader than that of the male. The species varies considerably in size.

Belvoisia bicincta R. Desvoidy, Myod. 103, 1; Macquart, Hist. Nat. Dipt ii, 112 (*Senometopia*); Dipt. Exot. ii, 3, 56, pl. vi, fig. 2*c*; 2e. Suppl. 66.

Male and female specimens from San Domingo, Arizona and California I refer to this species, differing from *bifasciata* in the antennæ being shorter, with the third joint not more than twice the length of the second, the posterior margin of the third segment more broadly black, and the last section of the fourth vein more concave. Macquart (l. c.) united the species, prematurely I think, as the difference in the antennæ is not sexual, as he supposed. I have males and females of each, agreeing in the antennal character, or at least not appreciably different. The difference in length is considerable, and I can hardly think it an individual variation; in any event numerous specimens are needed to make it clear that such is the case. The size of the pulvilli and ungues will distinguish the sexes.

Belvoisia v. d. Wulpi n. sp.

Female.—Black, face silvery on the sides; dorsum of thorax before the suture opaque, shining behind, the last two segments of the abdomen deep opaque orange-red, antennæ and legs black, wings brown. Length 14 mm.

In size and structure like *B. bifasciata*. Sides of the face silvery white, in the middle between the ridges opaque black. Front opaque black, the middle stripe ashy; on each side with two rows of bristles. Antennæ wholly black, the third joint about twice the length of the second. Palpi black, the tip cinereous. Dorsum of thorax to the suture, or a little beyond, deep opaque black, behind bright shining. Scutellum subopaque. First two segments of the abdomen deep black, moderately shining, the third and fourth wholly deep opaque orange or brick red. Tegulæ dark brown. Legs black; front femora behind with a row of rather slender bristles, the middle and hind tibiæ with stout spinous bristles without.

The front is narrower above than in *B. bifasciata*, the bristles of the front are stronger; there are but two on the hind margin of the first and second abdominal segments; the claws are small, as usual in the females. The wings are lighter colored in the anal angle and posterior border.

One specimen, San Domingo.

Saundersia flavitarsis Macquart, Dipt. Exot. ii, 3, 47, 3, pl. v, fig. 1, 1er. Suppl. 152, 11, pl. 13, fig. 7, 3e. Suppl. 45 (*Micropalpus*); Schiner, Novara Exped. 334.

Hab.—Mexico, South America.

An injured male specimen, without locality, but probably from New Mexico, is evidently of this species.

Saundersia signifera.

? *Tachina signifera* Walker, List, etc., iv, 708.

♂ ♀.—Abdomen black, fourth segment with a light golden gray opaque band. Length 12–13 mm.

Head yellowish white, sides of the front black, but concealed beneath light yellowish pollen; frontal stripe opaque red or ochraceous. Antennæ red, third

joint distinctly longer than the second, very convex in front, brown or black. Occiput thickly light yellowish pilose. Thorax black, light grayish yellowish dusted, with four narrow stripes, the median ones divergent and posteriorly abbreviated, the outer ones abbreviated and interrupted. Scutellum dark testaceous. Abdomen black, shining, the sides sometimes deep red; with black hair and moderately abundant spinous bristles, the sides in front broadly free of the latter; fourth segment with an opaque, light yellowish gray, entire cross-band, suddenly and moderately dilated in the middle in front to the anterior margin of the segment, in the middle behind with a slender point. Legs luteous reddish, the femora, except the distal end, black; front tarsi of female moderately dilated. Wings uniformly subinfuscated.

Numerous specimens, Connecticut, Massachusetts, New Hampshire, Pennsylvania, District of Columbia, California.

This is very probably Walker's species, but I do not feel sure; his specimen was from Nova Scotia.

Saundersia maculata n. sp.

Male.—Differs from *S. signifera* in the antennæ being rather smaller, in the coxæ and legs being wholly yellowish red, in the marking of the fourth abdominal segment being confined to a symmetrical, much smaller, tridentate spot, touching the anterior margin and emarginate on the sides; and in the larger size. Length 14 mm.

One specimen, New Mexico. This species must resemble *S.* (*Micropalpus*) *macula* Macquart (Dipt. Exot. ii, 3, 46, 2, pl. v, fig. 2), from South America.

Saundersia bicolor n. sp.

♂ ♀.—Base of abdomen light yellow, the distal part pitchy black; legs black, tibiæ reddish. Length 10–14 mm.

Head yellowish white, front with a broad ochraceous stripe. Antennæ black, basal joints more or less reddish; third joint considerably longer than the second, broad, strongly convex in front. Thorax black; sides of dorsum, and the pleuræ in large part, obscurely yellow or testaceous; dorsum light yellowish pollinose, with four inconspicuous stripes, interrupted at the suture, the median ones divergent and abbreviated behind. Scutellum obscurely testaceous. Abdomen light yellow; hind margin of the third segment above brown; a large oval spot on the first segment below the scutellum and the fourth segment, except a triangular spot at the tip above, pitchy black; sides in front broadly bare of spines. Legs black, the tibiæ reddish or yellowish; front tarsi of female moderately dilated. Wings strongly brownish infuscated; tegulæ brown. Venter with spines along the middle.

Numerous specimens, New Mexico, Arizona, California, Washington. The third antennal joint in the female is narrower than in the male.

Blepharipeza leucophrys Wiedemann, Auss. Zw. ii, 308, 49 (*Tachina*); Schiner, Novara Exped. 336; *Blepharipeza rufipalpis* Macquart, ii, 3, 55, 1, pl. vi, fig. 1, 1er Suppl. 158; Bigot, Ramon de la Sagra, 815; *Belvoisia rufipalpis* v. d. Wulp, Tijdschr. v. Ent. xxvi, 25.

Hab.—Connecticut, Pennsylvania, San Domingo, South America.

My specimens agree closely, and are doubtless of the same species as the South American ones. I have a specimen from Minnesota that has no spines on the anterior part of the second and third segments. It may be *B. bicolor* Macq., as "pas des soies au milieau des segments" seems to be the only difference indicated in the description.

Cyphocera ruficauda v. d. Wulp, Tijdschr. v. Ent. x, 146, 18 (*Schineria*); Loew, Zeitschr. f. ges. Naturw. xxxvi, 114.

Hab.—Eastern States.

A rather common species. Wiedemann's description of *C. macrocera* (Auss. Zw. ii, 290, 16, *Tachina*) applies very well to this species; v. d. Wulp has compared North and South American specimens, and believes them to be different (Tijdschr. v. Ent. xxvi, 13).

Siphona cristata Fabricius.

Specimens from the New England States agree so closely with the descriptions of this European species that a comparison is needed.

Roselia, Plagia, Myobia.

These European genera, not hitherto recorded from North America, I believe I recognize with sufficient certainty in specimens from the Eastern States.

MELANOPHRYS gen. nov. (*Tachininarum.*)

Head in profile nearly square. Front long, gently inclined, broad in the female, about one-third of the width of the head in the male; in the male with a single row of not very strong bristles reaching to but not below, the base of the antennæ. Face in profile very gently retreating, nearly vertical and straight, deeply excavated, and with sharp, smooth, free and bare lateral ridges; sides of face broad in the side view, wholly bare. Oral opening elongate; palpi slender, proboscis not elongate. Cheek nearly horizontal, gently convex below, broad, bare; fringed along the lower border with a row of fine bristles, not perceptibly stouter, or longer in front and not ascending on the side ridges; epistoma but very little projecting. Antennæ elongate, the third joint in the male four or five times as long as the second, in the female shorter; arista thickened, not elongate. Eyes rather small, elliptical, thinly pilose in the male (I do not distinguish any hairs in the female). Occiput convex. Abdomen short, broad, convex, bristles not abundant nor strong. Front tarsal joints of female slightly dilated. Neuration as in *Echinomyia;* posterior cross-vein gently bisinuate, posterior angle of first posterior cell rectangular and with a stump of a vein.

Melanophrys flavipennis n. sp.

♂ ♀.—Deep blue-black, shining; a silvery stripe between the eyes and base of the antennæ; wings light yellow at base; tegulæ yellow. Length 12–13 mm.

Cheeks and face bare, smooth, shining black; from the eye above, on each side, a horizontal yellowish silvery stripe runs to the base of the antennæ. Front less shining, in the middle with an opaque, lightly furrowed stripe. Antennæ black, arista luteous. Palpi luteous. Occiput with thin black pile. In the male, beside the black bristles, the dorsum of the thorax is clothed with moderately long thin black pile; in the female with short recumbent black hair. Abdomen in the male with short, erect, abundant black pile, wanting in the female; two weak bristles on the hind margin of the second segment, a row on the hind margin of the third and fourth segments. Legs black, bristles not very stout. Wings brownish yellowish, at the base light reddish yellow; tegulæ yellow.

Five specimens, Wyoming, California. In the California female the veins of the wings exteriorly are clouded with brown. The specimens from Wyoming I took in 1878 in the vicinity of Como. The species in general appearance resembles *Jurinia algens*, but the remarkably projecting face is very different from any Tachinid known to me.

Microphthalma nigra Macquart, Dipt. Exot. ii, 3, 85, 1, pl. x, fig. 2.

This species, the type of the genus, I have recognized in a specimen from Pennsylvania, but Macquart's specimens must have been in poor preservation. The face, cheeks and front are densely covered with pollen, that on the sides of the front ochraceous, the median frontal stripe is dark reddish brown. The ground color of the face and cheeks is, as stated by Macquart, deep red. The dorsum of the thorax and scutellum is thickly covered with brownish gray pollen, leaving four slender black stripes, the outer ones abbreviated and interrupted. The female front is broader than that of the female, and has, besides the single row of bristles of the male, two strong bristles without above. My male specimen, from Western Kansas, may be different. It has the ground color of the head lighter, the antennæ wholly red, the wings less brown, and the posterior cross-vein not *f* like, but with a strong median outward convexity.

Since writing the above, I have examined a number of specimens of this species from New England. Rather oddly, however, they were all greasy and uniformly black, apparently like Macquart's type. By soaking them in ether, however, they have been restored to nearly their original condition. They have the abdominal segments broadly banded in front with white pollen. The European species referred to this genus, by Egger, seems to be closely allied, the legs being perhaps lighter colored, and the abdomen differently marked.

Morinia sp.

I have species of this genus agreeing closely in their generic characters with European specimens.

Phrissopoda præceps Wiedemann.

I have specimens of this very large Sarcophagid, agreeing well with Wiedemann's description, from San Domingo.

Hypoderma lineata Villers, etc.

I have specimens of this species from Northern California and Arizona.

Œdemagena tarandi Linné, etc.

I can confirm the statements of the occurrence of this species in America. I have seen specimens from Alaska. Richardson (Fauna Boreali) speaks of the occurrence of a bot-fly in great numbers in the American Arctic regions; it is probably this.

Oehthera mantis Degeer.

I am unable to distinguish Californian and Eastern specimens of this common species.

Oehthera exsculpta Loew.

I have specimens of this Cuban species from the Southern States.

Spilographa electa Say.

Mr. Pergande has sent me specimens of this species bearing the label "Bred from berries of *Solanum carolina*, Oct. 7, 1877." They were from Missouri.

Cephalia rufipes Meigen. Syst. Beschr. v, 291, 1, pl. xlvii, fig. 15; Schiner, Fauna Austr. ii, 176.

Specimens from Virginia, collected by Mr. Pergande in June, agree so closely with the description of this European species, that I believe the species the same. The legs and front are dark, the hind femora and tibiæ almost wholly black. The fly is very singularly ant-like in appearance.

Catalogue of the Described Species of South American SYRPHIDÆ.

BY PROF. S. W. WILLISTON.

A catalogue of the South American species of Diptera is very much to be desired. One was begun, in an excellent way, recently by Lynch, but, unfortunately its progress has been interrupted, and its plan only comprised the Southern fauna. There is a vast deal of work yet to be done before any real list of the South American species is possible, for many synonyms will have to be cleared up, and most of the early described species must be recognized,—a no inconsiderable task—and redistributed in the modern genera; nevertheless, a preliminary catalogue will give us a sketch of the fauna,—an indispensable one—from which many lines must be rubbed out and many more filled in before the picture becomes at all complete. As a contribution towards this end, I offer the following list of the South American Species of Syrphidæ. Little can be done in such a work save compile, but I have spared no pains to render the compilation complete, and have made such distributions as a careful perusal of the descriptions and a tolerably full knowledge of the North American forms have suggested. It should be distinctly understood, however, that such distributions and remarks as I offer have only, in general, a negative value.

About three hundred names have been given to the South American species, distributed among about forty genera. About the same number of species are actually known to occur in the United States, located under nearly sixty genera, so that one may safely say that less than half of the actual fauna of South America in this family is yet known.

But little can be ventured on the general facies of the fauna based on descriptions alone, yet I would direct attention to some points of interest that have impressed me from a perusal of the literature. The *Volucella*, *Eristalis* and *Microdon* groups appear to be unusually predominant. Undoubtedly many of the names are synonyms, still, enough must remain to indicate a proportionally far greater abundance of these forms than exists North of Mexico, though their

Southern character is well indicated in our fauna. *Helophilus*, which with us is distinctly a Northern type, is poorly represented. Species and genera with club-shaped abdomen are unusually numerous, and are undoubtedly mostly very active in their habits. Forms conspicuous for their absence are the larger, bright-colored, less active species. I find no certain indication of a single species of *Milesia*, *Spilomyia*, or *Temnostoma*, having been hitherto described. The typical American genus *Mesograpta* is very rich in species, apparently, while *Syrphus*, in the narrow sense, I do not believe will be found as well represented as in North America. Nor do there seem to be any species of *Chilosia* now known. Owing to the greater diversity of physical conditions, it is very probable that a far richer and more varied fauna will be eventually disclosed, and one more divergent from the European, than is our own. The genera *Pia*, *Rhoga*, *Salpingogaster*, *Meromacrus*, *Orthlophus*, *Stilbosoma*, *Macrometopia*, *Sterphus*, and the less differentiated *Phalacromyia* and *Glaurotricha*, are, so far, peculiar to the region South of the United States.

Walker's species will be found in a list by themselves at the close. Generic names with him afford evidence so unreliable of the real affinities of the insects, that it is safest to consider the generic limits as commensurate with those of the family.

I desire to express my hearty thanks to Mr. George B. Cresson, Custodian of the American Entomological Society, for very kind assistance in the preparation of this paper.

MIXOGASTER.

Macquart, Dipt. Exot. ii, 2, 14, 1842.

conopsoides Macquart, Dipt. Exot. ii, 2, 14, pl. iii, fig. 1.—Brazil.

MICRODON.

Meigen, Illiger's Magazine, ii, 275, 1803.

angustiventris Macquart, Dipt. Exot. 5e Suppl. 85, 14, pl. v, fig. 1.—S. America.

angustus Macquart, Dipt. Exot. 1er Suppl. 122 (*Aphritis*); ibid. 3e Suppl. 38, 10 (*id.*).—Cayenne. [gen. nov.? Macq.]

aurifex Wiedemann, Auss. Zweifl. Ins. ii, 85, 7; Macquart, Dipt. Exot. ii, 2, 11, 2, pl. ii, fig. 2 (*Aphritis*); ? Williston, Synopsis, etc., 9.—Brazil.

? *Microdon Trochilus* Walker, Dipt. Saunders, 216.—Mexico.

bidens Fabricius, Syst. Antl. 185, 6 (*Mulio*); Wiedemann, Auss. Zweifl. Ins. ii, 84, 6.—S. America.

conopsoides Macquart, Dipt. Exot. ii, 2, 14, pl. iii, fig. 1.—Rio Janeiro.
crassitarsis Macquart, Dipt. Exot. 3e Suppl. 38, 9, pl. iv, fig. 2 (*Aphritis*).—Rio Negro.
cyanoventris Macquart, Dipt. Exot. 1er Suppl. 121, 7, pl. x, fig. 14 (*Aphritis*).—Columbia.
histrio Wiedemann, Auss. Zweifl. Ins. ii, 83, 3.—Montevideo.
ignobilis Rondani, Esami d. var. sp. d'insetti ditteri brasil. 72 (*Aphritis*).—Brazil.
instabilis Wiedemann, Auss. Zweifl. Ins. ii, 83, 4; Rondani, Esam. d. var. sp. etc. 72 (*Aphritis*).—Brazil.
limbatus Wiedemann, Auss. Zweifl. Ins. ii, 85, 8.—Brazil.
longicornis Wiedemann, Auss. Zweifl. Ins. ii, 80, 2 (*Ceratophya*); Macquart, Hist. Nat. Dipt. i, 488 (*Aphritis*).—Brazil.
notatus Wiedemann, Auss. Zweifl. Ins. ii, 80, 1, pl. ix, fig. 5 (*Ceratophya*): Macquart, Hist. Nat. Dipt. i, 488 (*id.*).—Brazil.
opulentus Bigot, Ann. Soc. Ent. Fr. 1884, 319.—Brazil.
pauper Rondani, Esami d. var. sp. d'insetti ditteri brasil. (*Aphritis*), 74.—Brazil.
rufiventris Rondani, Esami d. var. sp. d'insetti ditteri brasil (Studi Entom. fasc. 1, 3 *Aphritis*).—Brazil.
splendens Wiedemann, Auss. Zweifl. Ins. ii, 84, 5.—Brazil.
superbus Wiedemann, Auss. Zweifl. Ins. ii, 82, 2; Macquart, Hist. Nat. Dipt. i, 487 (*Aphrites*).—Brazil.
violaceus Macquart, Dipt. Exot. ii, 2, 13, 6, pl. i, fig. 3; Blanchard, Hist. Fis. y Pol. de Chile, vii, 404; Philippi, Verh. Zool. Bot. Gesellsch. xv, 733.—Chili.

PARAGUS.

Latreille, Dict. Hist. Nat. Deterv. 1804.

annulipes Macquart, Dipt. Exot. 4e Suppl. 160, 3.—Brazil.
ruficaudatus Bigot, Ann. Soc. Ent. Fr. 1883, 541.—Brazil.

PIPIZA.

Fallen, Dipt. Succ. Syrphici, 58, 1816.

aurantipes Bigot, Ann. Soc. Ent. Fr. (3), iv, 297 (*Cheilosia*); ibid. 1883, 223 (*Penium*).—Brazil.
dubia Bigot, Ann. Soc. Ent. Fr. 1883, 557 (*Penium*).—Chili.
flavipes Philippi, Verh. Zool. Bot. Gesellsch. xv, pl. xxvii, fig. 41 (*Penium*).—Brazil. [Not described.]
tristis Philippi, Verh. Zool. Bot. Gesellsch. xv, 741, pl. xxvii, fig. 38 (*Penium*).—Chili.

PIA.

Philippi, Verh. Zool. Bot. Gesellsch. xv, 742, 1865.

cyanea Philippi, Verh. Zool. Bot. Gesellschr. xv, 742, pl. xxvii, fig. 40.—Chili.

CHRYSOGASTER.

Meigen, Illiger's Magazine, iii, 274, 1803.

annulifera Bigot, Ann. Soc. Ent. Fr. 1883, 556 (*Orthoneura*).—Brazil.
lugubris Jaennicke, Neue Exot. Dipt. 4.—Chili.
nitida Wiedemann, Auss. Zweifl. Ins. ii, 116, 1; Schiner, Novara Exped. 368 (*Orthoneura*); Williston, Synopsis, etc., 35.—N. and S. America.

MELANOSTOMA.

Schiner, Wien. Ent. Monatschr. iv, 213, 1860.

cuceratum Bigot, Ann. Soc. Ent. Fr. 1884, 82.—Bogota.

fenestratum Macquart, Dipt. Exot. ii, 2, 103, 27, pl. xvii, fig. 6 (*Syrphus*); Blanchard, Hist. fis. y pol. de Chile, vii, 413 (*id.*); Philippi, Verh. Zool. Bot. Gesellsch. xv, 746 (*id.*); Schiner, Novara Exped. 351.—Chili. [Closely allied, apparently, to *M. tigrinum* O. S. and *M. obscurum* Say, all characterized by the ripple-like pollinose markings of the face, and the presence of bristles on the outer side of the middle tibiæ.]

mellinum Meigen, Schiner, Williston, etc.—N. and S. America, Europe.

Syrphus melliturgus Meigen; Macquart, Dipt. Exot. 4e Suppl. 152.

See also *Syrphus*.

CATABOMBA.

Osten Sacken, Western Dipt. 325, 1877.

melanostoma Macquart, Dipt. Exot. ii, 2, 87, 2 (*Syrphus*); Blanchard, Hist. fis. y pol. de Chile, vii, 410, 3 (*id.*); v. d. Wulp, Tijdschr. v. Ent. xxv, 134.—Chili.

Syrphus latafascies Macquart, Dipt. Exot. 4e Suppl. 152, 48.

pyrastri Linné, Meigen, Schiner, Williston, etc.; Macquart, Dipt. Exot. ii, 2, 88 (*Syrphus*).—Chili, N. America, Europe.

SYRPHUS.

Fabricius, System Entom. 1775.

A.—*Thoracic dorsum without yellow lateral markings, abdomen banded, face more or less yellow; Syrphus, sensu strictiori.*

erugosifrons Schiner, Novara Exped. 352.—S. America.

chaleonotus Philippi, Verh. Zool. Bot. Gesellsch. xv, 747.—Chili.

decemmaculatus Rondani, Archivio por la Zool. iii, 12.—Chili.

gastrostactus Wiedemann, Auss. Zweifl. Ins. ii, 123, 11.—Brazil.

Gayi Macquart, Dipt. Exot. ii, 2, 90, 6, pl. xv, fig. 8; Blanchard, Hist. Fis. y Pol. de Chile, vii, 409.—Chili.

Syrphus testaceicornis Macquart, Dipt. Exot. 4e Suppl. 153, 50, pl. xiv, fig. 12.

hortensis Philippi, Verh. Zool. Bot. Gesellsch. xv, 746, 11.—Chili.

interruptus Philippi, Verh. Zool. Bot. Gesellsch. xv, 747.—Chili.

Macquarti Blanchard, Hist. Fis. y Pol. de Chile, vii, 411, 5; Schiner, Novara Exped. 353.—Chili.

pallipes Bigot, Ann. Soc. Ent. Fr. 1884, 93.—Chili.

phaeostigma Wiedemann, Auss. Zweifl. Ins. ii, 130, 23.—Brazil.

poecilogaster Philippi, Verh. Zool. Bot. Gesellsch. xv, 746.—Chili.

sinuatineuris Macquart, Dipt. Exot. 4e Suppl. 151, 46, pl. xiv, fig. 10.—Brazil. [*Didea?*]

B.—*Thoracic dorsum with yellow lateral stripes or spots; Mesograpta, etc.*

calceolatus Macquart, Dipt. Exot. ii, 2, 91, 8, pl. xvi, fig. 1; Blanchard, Hist. Fis. y Pol. de Chile, vii, 411, 6; v. d. Wulp, Notes from the Leyden Museum, iv, 80, 12; Tijdschr. v. Ent. xxv, 136.—Chili.

columbianus Rondani, Arch. por. la Zool. iii, 11.—Columbia.

dispar Fabricius, Ent. Syst. iv, 309, 115; Antl. 253, 20 (*Scæva*); Wiedemann, Auss. Zweifl. Ins. ii, 141, 45.—S. America.

fascifrons Macquart, Dipt. Exot. 1er Suppl. 137, 34, pl. xi, fig. 11.—New Granada.

fuscanipennis Macquart, Dipt. Exot. 1er Suppl. 136, 31.—Brazil.

floralis Fabricius, Ent. Syst. Suppl. 563, 115; Syst. Antl. 253, 21 (*Scæva*); Wiedemann, Auss. Zweifl. Ins. ii, 145, 51.—Cayenne.

hortensis Philippi, Verh. Zool. Bot. Gesellsch. xv, 746.—Chili.

limbatus Wiedemann, Auss. Zweifl. Ins. ii, 133, 30; Fabricius, Syst. Antl. 251, 10 (*Scæva*). [*Sphærophoria ?*]

melanogaster Thomson, Eugenies Resa, 495.—Rio Janeiro.

minutus Wiedemann, Auss. Zweifl. Ins. ii, 140, 53.—Brazil.

musicus Fabricius, Syst. Antl. 253, 24 (*Scæva*); Wiedemann, Auss. Zweifl. Ins. ii, 143, 49; Macquart, Dipt. Exot. ii, 2, 98, 18, pl. xvi, fig. 9.—Brazil.

pictus Macquart, Dipt. Exot. ii, 2, 99, 21, pl. xvi, fig. 11.—Guiana.

plurimaculatus Rondani. Arch. por la Zool. iii, 12.

porticola Thomson, Eugenies Resa, 495.—Callao, Puna.

quadrigeminus Thomson, Eugenies Resa, 500.—Buenos Aires. [*Sphærophoria ?*]

sexguttatus v. d. Wulp, Tijdschr. v. Ent. xxv, 135.—Argentina.

sexmaculatus Macquart, Dipt. Exot. 4e Suppl. 153, 49; Blanchard, in Gay's Hist. Fis. y Pol. de Chile, vii, 411.—Chili.

tibicen Wiedemann, Auss. Zweifl. Ins. ii, 127, 19; Macquart, Dipt. Exot. ii, 2, 102, 26, pl. xvii, fig. 3; Walker, Trans. Linn. Soc. xvii, 346, 40.—Montevideo.

vertebratus ["Phil." ?] Rondani, Arch. por la Zool. iii, 10.—Chili.

virgulatus Macquart, Dipt. Exot. 4e Suppl. 152, 47, pl. xiv, fig. 11.—"Patrie inconnue, probablement le Brésil."

xanthopterus Wiedemann, Auss. Zweifl. Ins. ii, 120, 6.—Brazil. [*Allograpta ? Sphærophoria ?*]

C.—*Face in ground-color black; Melanostoma, etc.*

chiquitensis Macquart, Dipt. Exot. 4e Suppl. 154, 52.—Bolivia.

mellinoides Macquart, Dipt. Exot. 1er Suppl. 137, 33.—Columbia.

productus Macquart, Dipt. Exot. 4e Suppl. 154, 51, pl. xiv, fig. 13; Blanchard, Hist. Fis. y Pol. de Chile, vii, 412; Philippi, Verh. Zool. Bot. Gesellsch. xv, 746.—Chili.

D.—*Abdomen petiolate, or narrowed basally; wings often with a dark picture; Baccha, etc.*

clarapex Wiedemann, Auss. Zweifl. Ins. ii, 124, 13.—Brazil.

conjunctus Wiedemann, Auss. Zweifl. Ins. ii, 16, 1.—S. America.

flavipennis Wiedemann, Auss. Zweifl. Ins. ii, 123, 12.—Brazil.

sargoides Macquart, Dipt. Exot. 4e Suppl. 151, 45, pl. xiv, fig. 9.—Brazil. [*Doros ?*]

E.—*Syrphus sensu latiori incertæ sedis.*

auropulveratus Macquart, Dipt. Exot. ii, 2, 99, 20.—Chili.

bucephalus Wiedemann, Auss. Zweifl. Ins. ii, 126, 17.—Brazil.

immaculatus Dipt. Exot. ii, 2, 98, 19, pl. xvii, fig. 1.—Brazil. [Abdomen black.]

punctatus Macquart, Dipt. Exot. ii, 2, 92, 9.—Chili.

rubricosus Wiedemann, Auss. Zweifl. Ins. ii, 137, 36.—Brazil. [*Ocyptamus ?*]

tridentatus Rondani, Ann. Soc. Nat. Modena (2), iii, 24.—Patagonia.

vicinus Macquart, Dipt. Exot. 1er Suppl. 136, 32.—Brazil.

MESOGRAPTA.

Loew, Centur. vol. ii, 210, 1870 (for *Mesogramma* Loew, preoc.)

amœna Macquart, Dipt. Exot. 1er Suppl. 138, 35 (*Syrphus*).—Venezuela.
anchorata Macquart, Dipt. Exot. ii, 2, 97, 17, pl. xvi, fig. 8 (*Syrphus*); Schiner, Novara Exped. 348 (*Mesogramma*).—S. America.
anthrax Schiner, Novara Exped. 350 (*Mesogramma*).—S. America.
basilaris Wiedemann, Auss. Zweifl. Ins. ii, 143, 48; v. d. Wulp, Tijdschr. v. Ent. xxvi, 6, pl. i, fig. 8.—Gaudeloupe, Brazil.
confusa Schiner, Novara Exped. 349.—S. America.
duplicata Wiedemann, Auss. Zweifl. Ins. ii, 132, 46 (*Syrphus*); Macquart, Dipt. Exot. ii, 2, 91, 7, pl. xv, fig. 9 (*id.*); Schiner, Novara Exped. (*Mesogramma*); 350.—Argentina, Rio Janeiro, Columbia.
Syrphus ochrogaster Thomson, Dipt. Eugenies Resa, 495, 82 [v. d. Wulp, Tijdschr. v. Ent. xxvi, 4, pl. i, fig. 3.]
hieroglyphica Schiner, Novara Exped. 348 (*Mesogramma*).—S. America.
insignis Schiner, Novara Exped. 347 (*Mesogramma*).—S. America.
jaguarina Bigot, Ann. Soc. Ent. Fr. 1884, 112.—Brazil.
lacrymosa Bigot, Ann. Soc. Ent. Fr. 1884, 108.—Mexico, Brazil.
maculata Bigot, Ann. Soc. Ent. Fr. 1884, 111.—Mexico, Cuba, Brazil.
maculipes Bigot, Ann. Soc. Ent. Fr. 1884, 113.—Brazil.
nitida Schiner, Novara Exped. 349 (*Mesogramma*).—S. America.
paragramma Schiner, Novara Exped. 349 (*Mesogramma*).—S. America.
soror Schiner, Novara Exped. 350 (*Mesogramma*).—S. America.
See also *Syrphus*.

ALLOGRAPTA.

Osten Sacken, Bull. Buff. Nat. Sci. iii, 49, 1876.

exotica Wiedemann, Auss. Zweifl. Ins. ii, 136, 35 (*Syrphus*); v. d. Wulp, Tijdschr. v. Ent. xxvi, 2, pl. i, fig. 2.—Guadeloupe, S. America.
obliqua Say, Journ. Ac. Phil. iii, 91, 5 (*Scæva*); Wiedemann, Auss. Zweifl. Ins. ii, 138, 39 (*Syrphus*); v. d. Wulp, Tijdschr. v. Ent. xxvi, 1; Williston, Synopsis, etc., 96.—Argentina (v. d. Wulp), N. America.
Syrphus securiferus Macquart, Dipt. Exot. ii, 2, 100, 22, pl. xvi, fig. 10; 1 Suppl. 139.
Syrphus signatus v. d. Wulp, Tijdschr. v. Ent. x, 144, 16, pl. iv, fig. 12.
Sphærophoria Bacchides Walker, List, etc., ii., 594.
Syrphus dimensus Walker, Dipt. Saunders 235.
See also *Syrphus*.

OCYPTAMUS.

Macquart, Hist. Nat. Dipt. i, 554, 1834.

albimanus Bigot, Ann. Soc. Ent. Fr. 1884, 325.—Chili.
dimidiatus Fabricius, Spec. Insect. ii, 434, 64 (*Syrphus*); Entom. Syst. iv, 310, 118 (*Syrphus*); Syst. Antl. 254, 25 (*Scæva*); Wiedemann, Auss. Zweifl. Ins. ii, 140, 42 (*Syrphus*); v. d. Wulp, Tijdschr. v. Ent. xxvi, 10; Williston, Synopsis, etc., 120, pl. v, fig. 10 (♀).—West Indies, Brazil.

funebris Macquart, Hist. Nat. Dipt. i, 554; Dipt. Exot. ii, 2, 105, pl. xix, fig. 2; Bigot, Ramon de la Sagra, 807; v. d. Wulp, Tijdschr. v. Ent. xxvi, 9; Schiner, Novara Exped. 346.—Brazil, Teneriffe.

proximus Schiner, Novara Exped. 346.—Brazil.

trigonus Wiedemann, Auss. Zweifl. Ins. ii, 126, 16 (*Syrphus*); Schiner, Novara Exped. 346.—Columbia.

† **valdivianus** Philippi, Verh. Zool. Bot. Gesellsch. xv, 748, pl. xxvii, fig. 43.—Chili. [Can hardly belong to this genus. It may be a *Melanostoma*.]

See also *Syrphus*.

BACCHA.

Fabricius, Syst. Antl. 199, 1805.

adspersa Fabricius Syst. Antl. 200, 5; Wiedemann, Auss. Zweifl. Ins. ii, 97, 9; Schiner, Novara Exped. 342.—S. America.

apicalis Bigot, Ann. Soc. Ent. Fr. 1884, 334.—Brazil.

brevipennis Schiner, Novara Exped. 341.—S. America.

clavata Fabricius, Entom. Syst. iv, 298, 73 (*Syrphus*); Syst. Antl. 200, 3; Wiedemann, Auss. Zweifl. Ins. ii, 94, 4; Schiner, Novara Exped. 341.—West Indies, S. America.

conopida Philippi, Verh. Zool. Bot. Gesellsch. xv, 750.—Chili.

flavicornis Philippi, Verh. Zool. Bot. Gesellsch. xv, 749.—Chili.

gigantea Schiner, Novara Exped. 340.—S. America.

livida Schiner, Novara Exped. 343.—S. America.

lugubris Philippi, Verh. Zool. Bot. Gesellsch. xv, 749.—Chili.

melanorrhina Philippi, Verh. Zool. Bot. Gesellsch. xv, 749.—Chili.

nigrifrons Bigot, Ann. Soc. Ent. Fr. 1884, 335.—Chili.

phaeoptera Schiner, Novara Exped. 342.—S. America.

pilipes Schiner, Novara Exped. 342.—S. America.

rugosifrons Schiner, Novara Exped. 341.—S. America.

transatlantica Schiner, Novara Exped. 343.—Columbia, Brazil.

valdiviana Philippi, Verh. Zool. Bot. Gesellsch. xv, 750.—Chili.

variegata Macquart, Dipt. Exot. ii, 2, 108, 2, pl. xviii, fig. 4.—Guaratuba.

See also *Syrphus*.

SPHEGINA.

Meigen, Syst. Beschr. iii, 193, 1822.

† **chiragra** Fabricius, Wiedemann, Auss. Zweifl. Ins. ii, 150, 5 (*Merodon*).—S. America. [The description, reproduced from Fabricius, was thought by Wiedemann to be perhaps that of an *Ascia*; the description, however, reads more like that of a *Sphegina*.]

DOROS.

Meigen, Illiger's Magazine ii, 274, 1803.

† **odyneroides** Philippi, Verh. Zool. Bot. Gesellsch. xv, 747, pl. xxvii, fig. 44. - Chili. [This cannot be a *Doros*, as Philippi observes.]

SALPINGOGASTER.

Schiner, Novara Exped. 344, 1868.

cestalis Walker, Dipt. Saunders i, 223 (*Amathia*).—Brazil.
macula Schiner, Novara Exped. 345.—Chili.
nigra Schiner, Novara Exped. 345, pl. iv, fig. 4.—S. America.
nigroventris Bigot, Ann. Soc. Ent. Fr. 1884, 329.—Montevideo.
pygophora Schiner, Novara Exped. 344.—S. America.

MYIOLEPTA.

Newman, Entom. Mag. 1838, p. 373.

hæmorrhoidalis Philippi, Verh. Zool. Bot. Gesellsch. xv, 740, 2, pl. xxvii, fig. 42 (*Priomerus*).—Chili.
luctuosa Philippi, Verh. Zool. Bot. Gesellsch. xv, 739, 1, pl. xxvii, fig. 43 (*Priomerus*); Schiner, Novara Exped. 367; Bigot, Ann. Soc. Ent. Fr. 1883, 222.—Chili.
Helophilus luctuosus Bigot, Ann. Soc. Ent. Fr. (3) v, 296, pl. vii, fig. 7; Rondani, Archivio por la Zool. iii, 9 (*Xiloteja*). [This synonymy of *H. luctuosus* was given as probable by Philippi, but it does not seem at all doubtful.]

RHINGIA.

Scopoli, Ent. Carniolica, 1763.

nigra Macquart, Dipt. Exot. 1er Suppl. 133, 1, pl. xi, fig. 10.—Columbia.
*Lycastrirhyncha nitens** Bigot, Rev. et Mag. Zool. 1859; Ann. Soc. Ent. Fr. 1881, 373.—Amazon.

GLAUROTRICHA.

Thomson, Eugenies Resa, 493, 1868.

muscaria Thomson, Eugenies Resa 493 (*Haurotricha*), pl. ix, fig. 7.—Buenos Aires.

PHALACROMYIA.†

Rondani, Esam. d. var. sp. Ditt. Brasil, 67, 1848.

argentina Bigot, Ann. Soc. Ent. Fr. 1883, 87; Roeder, Stett. Ent. Zeit. 1886, 283.—Argentina, Columbia.
chalybescens Wiedemann, Auss. Zweifl. Ins. ii, 204, 16 (*Volucella*); Mik, Wien Entom. Zeit. 1883, 284.—Brazil.

---

* Mr. Bigot suppresses (l. c.) both *Lycastrirhyncha* Big. and *Lycastris* Walk. as not being sufficiently distinct from *Rhingia*; at the same time he retains his own genus in his synoptic table of the genera of Syrphidæ (Ann. Soc. Ent. Fr. 1883, 230–258) under the group with closed marginal cell, where, indeed, his original diagnosis of the genus would bring it. Macquart describes *R. nigra* as having "nervures normales"; if he was correct, *R. nigra* and *L. nitens* must be distinct, both specifically and, probably, generically.

† For dichotomous tables of the known species of *Phalacromyia* and *Volucella*, see Bigot, Ann. Soc. Ent. Fr. 1883, 61–83.

concolor Philippi, Verh. Zool. Bot. Gesellsch. xv, 735.—Chili.
dorsalis Wiedemann, Auss. Zweifl. Ins. ii, 199, 7 (*Volucella*; Mik. Wien. Ent. Zeit. 1883, 284.—Brazil.
nigripes Bigot, Ann. Soc. et Fr. (3), v, 296, pl. vii, fig. 9; Schiner, Novara Exped. 354; Philippi, Verh. Zool. Bot. Gesellsch. xv, 754.—Chili.
pectoralis Rondani, Archivio por Zool. iii, 3.
pica Schiner, Novara Exped. 355, pl. iv, fig. 6 (*picta*).—Columbia.
prasina Schiner Novara Exped. 354.—S. America.
rufoscutellaris Philippi, Verh. Zool. Bot. Gesellsch. xv, 735.—Chili.
soror Bigot, Ann. Soc. Ent. Fr. 1883, 88.—Buenos Aires. ["Variété de *P. argentina?*"]
subcœrulea Rondani, Archivio por la Zool. iii, 3.
submetallica Rondani, Esame d. var. sp. etc., 67.—Brazil.
subrostrata Rondani, Esame d. var. sp. etc., 68.—Brazil.
vaga Wiedemann, Auss. Zweifl. Ins. ii, 205, 19 (*Volucella*); [Schiner.]
See also *Volucella*.

VOLUCELLA.*

Geoffrey, Hist. des Ins. des Environs de Paris, 1764.

alchimista Rondani, Esam. d. var. sp. etc. 64.—Brazil.
azurea Philippi, Verh. Zool. Bot. Gesellsch. xv, 734, 3.—Chili.
cyanescens Macquart, Dipt. Exot. ii, 2, 24, pl. vi, fig. 1.—Brazil.
concinna Philippi, Verh. Zool. Bot. Gesellsch. xv, 733.—Chili.
esuriens Fabricius, Entom. Syst. iv, 281, 10 (*Syrphus*); Wiedemann, Auss. Zweifl. Ins. ii, 197, 4.—S. America.
Volucellar dispar Macquart, Dipt. Exot. Suppl. 1er, 123, 13, pl. xi, fig. 2.
Volucella metallifera, Walker, List, iii, 636.
flavipennis Wiedemann, Auss. Zweifl. Ins. ii, 203, 15.—Brazil.
fulvonotata Bigot, Ann. Soc. Ent. Fr. 1875, 476.—Montevideo.
fuscipennis Macquart, Dipt. Exot. ii, 2, 24, 5, pl. iv, fig. 2.—Brazil.
fuscipennis Macquart, Dipt. Exot. 4e Suppl. 131, 14, pl. xii, fig. 14.—Bolivia.
hirtipes Macquart, Dipt. Exot. 4e Suppl. 130, 13, pl. xii, fig. 13.—Brazil.
lugens Wiedemann, Auss. Zweifl. Ins. ii, 206, 20; Schiner, Novara Exped. 357.—Brazil.
macrorrhina Bigot, Ann. Soc. Ent. Fr. 1875, 474.—Brazil.
macula Wiedemann, Auss. Zweifl. Ins. ii, 200, 10; Macquart, Dipt. Exot. ii, 2, 24, pl. iv, fig. 1.—Brazil, Columbia.
notata Bigot, Ann. Soc. Ent. Fr. 1875, 475, 6; v. d. Wulp, Tijdschr. v. Ent. xxv, 122.—Montevideo.
obesa Fabricius, Syst. Ent. 763, 5 (*Syrphus*); Ent. Syst. iv, 282, 15 (*id.*); Syst. Antl. 227, 14 (*id.*); Wiedemann, Auss. Zweifl. Ins. ii, 199, 8; Macquart, Hist. Nat. Dipt. i, 494, 5; Bigot, Ramon de la Sagra, 801; St. Fargeau and Serville, Encycl. Meth. x, 786 (*Ornidia*); Walker, Linn. Trans. xvii, 346, 41 (*Ornidia*); Williston, Synopsis, etc.—Tropics.
pallens Wiedemann, Auss. Zweifl. Ins. ii, 204, 18.—Brazil.
? *Volucella sexpunctata* Loew, Centur. vi, 31; Williston, Synopsis, etc., 141.
pallida Macquart, Dipt. Exot. ii, 2, 26, 11.—Guiana.

See foot note on page 315.

parva Rondani, Esame d. var. sp. etc.—Brazil.
pectoralis Rondani, Archivio por la Zool. iii, 3.—S. America.
picta Wiedemann, Auss. Zweifl. Ins. ii, 201, 12; Rondani, Esami d. var. sp. etc. 65; Schiner, Novara Exped. 358.—Brazil.
polorans Rondani, Esame d. var. sp. etc. 65.—Brazil.
punctifera Bigot, Ann. Soc. Ent. Fr. 1875, 475.—Amazon.
purpurea Walker, List, etc., iii, 637.—Para.
saphirina Bigot, Ann. Soc. Ent. Fr. 1883, 85.—Chili.
scutellata Macquart, Dipt. Exot. ii, 2, 25, 9, pl. vi, fig. 2; Blanchard, in Gay's Hist. fis. y. pol. de Chile, vii, 405, 1, pl. iv, fig. 6; v. d. Wulp, Notes from the Leyden Museum, iv, 79, 8; Tijdschr. v. Entom. xxv, 122; Philippi, Verh. Zool. Bot. Gesellsch. xv, 733; Bigot, Bull. Soc. Ent. Fr. 1882 (*Atemnocera*).—Chili.
testacea Rondani, Esame d. var. sp. etc. 67.—Brazil.
transatlantica Rondani, Archivio por la Zool. iii, 4.—S. America.
tympanitis Fabricius, Syst. Antl. 226, 10 (*Syrphus*); Wiedemann, Auss. Zweifl. Ins. ii, 200, 9.
vacua Fabricius, Syst. Entom. 763, 4 (*Syrphus*); Entom. Syst. iv, 281, 14 (*id.*); Syst. Antl. 227, 13 (*id.*); Wiedemann, Auss. Zweifl. Ins. ii, 202, 13.—S. America.
vesiculosa Fabricius, Syst. Antl. 226, 11 (*Syrphus*); Wiedemann, Auss. Zweifl. Ins. ii, 201, 11; Macquart, Dipt. Exot. 3e Suppl. 39, pl. iv, fig. 3; Williston, Synopsis, etc., 141, pl. vi, fig. 1.—N. and S. America.
violacea Macquart (non Say), Dipt. Exot. ii, 2, 23, 3, pl. vi, fig. 3.—Brazil.

TEMNOCERA.

St. Fargeau and Serville, Encycl. Meth. x, 726, 1825.

andicola Bigot, Ann. Soc. Ent. Fr. 1884, 548.—Chili.
Frauenfeldi Schiner, Novara Exped. 358.—Chili.
fulvicornis Bigot, Ann. Soc. Ent. Fr. 1884, 547.—Buenos Aires.
gibbera Schiner, Novara Exped. 358.—Columbia.
recta v. d. Wulp, Tijdschr. v. Ent. xxv, 125, pl. x, fig. 9.—Argentina.
spinigera Wiedemann, Auss. Zweifl. Ins. ii, 197 (*Volucella*); Macquart, Dipt. Exot. ii, 2, 27, 1, pl. vii, fig. 1; ibid. 1er Suppl. 126; v. d. Wulp, Tijdschr. v. Entom. xxv, 123.—Brazil, Argentina.

See also *Volucella*.

COPESTYLUM.

Macquart. Dipt. Exot. 1er Suppl. 124, 1846.

flaviventris Macquart, Dipt. Exot. 1er Suppl. 124, pl. x, fig. 6.—Venezuela, Columbia.

? *Copestylum marginatum* Say; Williston, Synopsis, 151, pl. vii, fig. 1.—North America.

ERISTALIS.

Latreille, Hist. Nat. Crust. et Ins. xiv, 473, 1804.

A.—*Hind femora dilated or thickened.*

calops Bigot, Ann. Soc. Ent. Fr. 1880, 227.—Columbia. [Allied to *E. æneus* ?]
crocsipes Bigot, Ann. Soc. Ent. Fr. 1880. 227.—S. America.

foveifrons Thomson, Eugenies Resa, 491.—Buenos Aires. [Compare *Megaspis*.]

furcatus Wiedemann, Zool. Mag. iii, 51; Auss. Zweifl. Ins. ii, 176, 34; Schiner, Novara Exped. 362; v. d. Wulp, Tijdschr. v. Ent. xxv, 131.—Brazil, Argentina, Columbia, Yucatan.

Eristalis femoratus Macquart, Dipt. Exot. ii, 2, 40, 15, pl. ix, fig. 6; ibid. 1er Suppl. 130, 51. [Schiner.]

geniculatus Fabricius, Syst. Antl. 237, 23; Wiedemann, Auss. Zw. Ins. ii, 170, 25.

Meigenii Wiedemann, Auss. Zweifl. Ins. ii, 177, 35, pl. xb, fig. 15.—Montevideo.

melanaspis Wiedemann, Auss. Zweifl. Ins. ii, 176, 33.—Brazil.

montanus Roeder (not Williston), Stett. Ent. Zeit. 1886, 263.—Columbia.

nigripennis Macquart, Dipt. Exot. 5e Suppl. 58, 71.—Columbia.

nigroscutellatus Macquart, Dipt. Exot. 3e Suppl. 41, 58.—Brazil.

obsoletus Wiedemann, Auss. Zweifl. Ins. ii, 175, 32; Schiner, Novara Exped. 361.—Brazil.

pachypus Wiedemann, Auss. Zw. Ins. ii, 171, 26.—S. America.

Eristalis crassipes Fabricius, Syst. Antl. 196, 3. [Name preoccupied by Fabricius.]

Philippi Schiner, Novara Exped. 363.—Chili.

pygolampus Wiedemann, Auss. Zw. Ins. ii, 161, 12; Macquart, Dipt. Exot. ii, 2, 37, 11, pl. ix, fig. 5.—Brazil.

quitensis Macquart, Dipt. Exot. 5e Suppl. 89, 73.—Quito.

rufipes Macquart, Dipt. Exot. ii, 2, 42, 18.—Brazil.

tænia Wiedemann, Auss. Zw. Ins. ii, 174, 31; Schiner, Novara Exped. 361.—Montevideo. [The author says this is perhaps only a variety of the "preceding" species (*Helophilus chrysostomus*), but there seems to be some confusion in the reference.]

Thoracic dorsum fasciate.

agnata Rondani, Annali di Bologna, 1850.

? *Eristalis limbatineuris* Macquart, Dipt. Exot. 4e Suppl. 137, 60.—Brazil. [Rondani.]

agrorum Fabricius, Ent. Syst. iv, 285, 27 (*Syrphus*); Syst. Antl. 235, 12; Wiedemann, Auss. Zw. Ins. ii, 172, 28.—Argentina, Gaudeloupe [v. d. Wulp.]

albiventris Bigot, Ann. Soc. Ent. Fr. 1880, 228.—Montevideo.

conicus Fabricius, Syst. Antl. 190, 12 (*Milesia*); Wiedemann, Auss. Zw. Ins. ii, 650, 4.—S. America.

cosmius Schiner, Novara Exped. 362.—S. America.

fasciatus Wiedemann, Zool. Mag. iii, 51; Auss. Zw. Ins. ii, 173, 29; Macquart, Dipt. Exot. ii, 2, 57, 42; Rondani, Esam. d. var. sp. etc. 68.—S. America.

nigripes Wiedemann, Auss. Zw. Ins. ii 165, 17.—Brazil.

podagra Macquart, Dipt. Exot. ii, 2, 38, 12.—Brazil.

rufiventris Macquart, Dipt. Exot. 1er Suppl. 129, 51.—Columbia.

scutellaris Fabricius, Syst. Antl. 190, 11 (*Milesia*); Wiedemann, Auss. Zw. Ins. ii, 159, 12; Macquart, Dipt. Exot. ii, 2, 41, 17; Schiner, Novara Exped. 364.—Brazil, Cayenne.

Palpada scutellata Macquart, Hist. Nat. Dipt. i, 513; Dipt. Exot. ii, 2, 38, 13 (*Eristalis*); Bigot, Ann. Soc. Ent. Fr. 1883, 222 (*Priomerus*). [Schiner.]

Priomerus bimaculatus Macquart; Bigot, Ann. Soc. Ent. Fr. 1883, 222.

? *Eristalis fascithorax* Macquart, Dipt. Exot. 4e Suppl. 139, 63.—America. [Schiner.]

? *Dolichsyrphus Rileyi* Williston, Synopsis, 178, pl. viii, fig. 8.—N. America.

trifasciatus Macquart (non Say), Dipt. Exot. ii, 2, 39, 14, pl. x, fig. 1.—Brazil.

vinetorum Fabricius, Ent. Syst. Suppl. 563, 27 (*Syrphus*); Syst. Antl. 235, 13 (*Eristalis*); Wiedemann, Auss. Zw. Ins. ii, 163, 15 (*id.*); Macquart, Dipt. Exot. ii, 2, 41, 16 (*id.*).—N. and S. America.

Eristalis trifasciatus Say, J. Acad. Phil. vi, 165; Compl. Wr. ii, 359.

Eristalis uvarum Walker, List, etc., iii, 623.

Eristalis thoracicus Jaennicke, Neue Exot. Dipt. 91.

B.—*Hind femora not dilated or thickened.*

assimilis Macquart, Dipt. Exot. 1er Suppl. 129, 50; Schiner, Novara Exped. 361. —Columbia.

bogotensis Macquart, Dipt. Exot. ii, 2, 52, 33; v. d. Wulp, Notes from the Leyden Museum, v. 79, 9; Tijdschr. v. Ent. xxv, 129.—Bogota, Argentina.

chilena Rondani, Archivio por la Zool. iii, 5 (*Eristalomyia*).—Chili. [Allied to *Meigenii?*]

colombicus Macquart, Dipt. Exot. 5e Suppl. 88, 70.—Columbia.

concolor Philippi, Verh. Zool. Bot. Gesellsch. xv, 743.—Chili. [Allied to *æneus?*]

distinguendus Wiedemann, Auss. Zw. Ins. ii, 191, 55; Macquart, Dipt. Exot. ii, 2, 50, 30.—Brazil, Chili, Montevideo.

elegans Blanchard, Hist. Fis. y pol. de Chile, vii, 406, 1, pl. iv, fig. 1.—Chili. [Schiner, Novara Exped. 361.]

fulvitarsis Rondani, Archivio por la Zool. iii, 6.

Eristalis rufitarsis Macquart, Dipt. Exot. 5e Suppl. 89, 72.—Columbia. [Change of name by Rondani.]

pusillus Macquart, Dipt. Exot. ii, 2, 54, 37.—Lamana.

quadraticornis Macquart, Dipt. Exot. ii, 2, 51, 31, pl. x, fig. 2; Blanchard, Hist. Fis. y Pol. de Chile, vii, 406; Rondani, Archivio por la Zool. iii; v. d. Wulp, Notes from the Leyden Museum, v, 80.—Chili.

Eristalis testaceiscutellatus Macquart, Dipt. Exot. 4e Suppl. 138, 61, pl. xiii, fig. 2.

xanthaspis Wiedemann, Auss. Zw. Ins. ii, 181, 56, Schiner, Novara Exped. 361. —Chili.

Thoracic dorsum fasciate.

albifrons Wiedemann, Auss. Zw. Ins. ii, 189, 53.—Brazil.

annulipes Macquart, Dipt. Exot. ii, 2, 49, 29.—Rio Janeiro. [Compare Macquart, Dipt. Exot. ii, 2. 43, under *E. cubensis*.]

calomera Bigot, Ann. Soc. Ent. Fr. 1880, 229; ibid. 1884, 337 (*Eristalomyia*).—S. America. [There are apparently two species here.]

flaviponnis Macquart, Dipt. Exot. ii, 2, 52, 34.—Guiana.

pusio Wiedemann, Auss. Zw. Ins. ii, 192, 59.—Brazil, Porto Rico. [Roedes, Stett. Ent. Zeit. 1886, 263.]

surinamensis Macquart, Dipt. Exot. ii, 2, 53, 35.—Surinam, Brazil.

C.—*Species incertæ sedis.*

angustatus Rondani, Esame d. var. sp. etc. 69.—Brazil.

bifasciatus Macquart, Dipt. Exot. 5e Suppl. 87, 69.—Brazil.

chilensis Philippi, Verh. Zool. Bot. Gesellsch. xv, 743.—Chili.

cognata Rondani, Esame d. var. sp. etc. 69 (*? E. agnata*).—Brazil.

inca Bigot, Ann. Soc. Ent. Fr. 1880, 217.—Peru.

incerta Bigot, Ann. Soc. Ent. Fr. 1880, 222 (*Eristalomyia*).—Brazil.

MEGASPIS.

Macquart, Dipt. Exot. ii, 2, 47, 1842.

ruficeps Macquart, Dipt. Exot. ii. 2, 51, 32 (*Eristalis*); Schiner, Novara Exped. 365.

MEROMACRUS.

Rondani, Esame d. var. sp. Ditt. Brasil, 70, 1848.

Ghiliani Rondani, Esame d. var. sp. etc. 71.—Brazil.

PTEROPTILA.

Loew, Centur. vi, 59, 1866 (for *Plagiocera* Macq., preoc.)

circumdata Bigot, Ann. Soc. Ent. Fr. 1875, 471 (*Sphixea*).—Columbia.
milesoides Bigot, Ann. Soc. Ent. Fr. 1880, 226 (*Eristalis*).—Brazil.
pratorum Fabricius, Syst. Ent. 765, 13 (*Syrphus*); Ent. Syst. iv, 286, 31 *id.*); Syst. Antl. 236, 18 (*Eristalis*); Wiedemann, Auss. Zw. Ins. ii, 166, 20 (*id.*).—West Indies, S. America.
simplex Schiner, Novara Exped. 365 (*Plagiocera*).—Brazil.

DOLIOSYRPHUS.

Bigot, Bull. Soc. Ent. de Fr. 1882, No. 13.

geniculatus Bigot, Ann. Soc. Ent. Fr. 1884, 343.—Buenos Aires.
See also *Eristalis*.

MALLOTA.

Meigen, Syst. Beschr. iii, 377, 1822.

analis Macquart, Dipt. Exot. 1 Suppl. 132, 3, pl. xi, fig. 8 (*Imatisma*).—New Granada.
Colombii Macquart, Dipt. Exot. 4e Suppl. 141, 1, pl. xiii, fig. 3; Schiner, Novara Exped. 360.—Columbia. [This appears to be the same as the preceding.]
xylotæformis Schiner, Novara Exped. 360.—Chili.
† **magnifica** Bigot, Ann. Soc. Ent. Fr. 1880, 85 (*Plagiocera*); ibid. 1883, 225 (*Leiops*).—Columbia. [The genus Leiops cannot be separated from *Mallota* by the bareness of the eyes. *M. magnifica* certainly must have the facies of a *Pteroptila*, where the author first located it. It can hardly remain in *Mallota*.]

DOLICHOGYNA.

Macquart, Dipt. Exot. ii, 2, 66, 1842.

fasciata Macquart, Dipt. Exot. ii, 66, 1, pl. xii, fig. 1; Blanchard, in Gay's Hist. Fis. y Pol. de Chile, vii, 408, pl. iv, fig. 8; Philippi, Verh. Zool. Bot. Gesellsch. xv, 744; v. d. Wulp, Notes from the Leyden Museum, iv, 80, 11; Tijdschr. v. Entom. xxv, 133.—Chili.
Helophilus chilensis Walker, Linn. Trans. xvii, 344, 35. [Walker, List, iii, 606.]
nigripes Bigot, Ann. Soc. Ent. Fr. 1884, 346.—Chili.

HELOPHILUS.

Meigen, Illiger's Magazine, ii, 274, 1803.

annulipes Macquart, Dipt. Exot. 4e Suppl. 142, 12.—America.
rostratus Macquart, Dipt. Exot. 1, Suppl. 131, 8, pl. xi, fig. 8.—New Granada.
pictus Philippi, Verh. Zool. Bot. Gesellsch. xv, 743.—Chili.
cyanescens Macquart, Hist. Nat. Dipt. i, 511.—Brazil. [A doubtful *Helophilus*.]
See *Myiolepta* for *H. luctuosus* Big.

TROPIDIA.

Meigen, Syst. Beschr. iii, 346, 1822.

flavimana Philippi, Verh. Zool. Bot. Gesellsch. xv, 745.—Chili.
nigricornis Philippi, Verh. Zool. Bot. Gesellsch. xv, 745.—Chili.
rubricornis Philippi, Verh. Zool. Bot. Gesellsch. xv, 744.—Chili.

ORTHOLOPHUS.

Bigot, Bullet. Soc. Ent. Fr. 1882.

notatus Bigot, Ann. Soc. Ent. Fr. 1884, 535.—Chili.

XYLOTA.

Meigen, Syst. Beschr. iii, 211, 1822.

aurifacies Bigot?; Schiner, Novara Exped. 360.—Chili.
bivittata Bigot, Ann. Soc. Ent. Fr. 1883, 546.—Chili.
cærulea Rondani, Archivio por. la Zool. iii, 8.—Chili.
chloropyga Schiner, Novara Exped. 366.—Columbia.
latitarsata Macquart, Dipt. Exot. ii, 2, 73, 2, pl. xiv, fig. 1.—S. America?
plagiata Wiedemann, Auss. Zw. Ins. ii, 98, 2.—Brazil.

Genus novum?

coaretata Wiedemann, Auss. Zw. Ins. ii, 100, 4.—Brazil. [The petiolate abdomen and carinate face will require this to be placed in some other genus than *Xylota*.]

Planes, Rondani, Archivio por la Zool. iii, 9, 1864.

vagans Wiedemann, Auss. Zw. Ins. ii, 101, 7; Rondani, Esam. d. var. sp. etc. 71; Rondani, Archivio por la Zool. iii, 9 (*Planes*).—Brazil. [Separated from *Xylota* by Rondani on account of the elongate third joint of the antennæ.]

SENOGASTER.

Macquart, Hist. Nat. Dipt. i, 519, 1834.

dentipes Fabricius, Ent. Syst. iv, 297, 68, ♂ (*Syrphus*); Entom. Syst. Suppl. 558, 5 (*Mulio*); Syst. Antl. 194, 25 (*Milesia*); Wiedemann, Auss. Zw. Ins. ii, 108 6 (*Milesia*).—S. America.

Milesia lineata Fabricius, Syst. Antl. 194, 26, ♀.

? *Senogaster cœrulescens* Macquart. Hist. Nat. Dipt. i, 519; Dipt. Exot. ii, 2, 72, 1, pl. xiii, fig. 3 (♂).—Cayenne.

? *Acrochordonodes vittatus* Bigot, Bull. Soc. Ent. Fr. 1878, No. 13 (♀).—Cayenne.

? *Senogaster Comstocki* Williston, Proc. Am. Phil. Soc. xx, 326; Synopsis, 239, pl. ix, fig. 1.—N. America.

SYRITTA.

St. Fargeau and Serville, Encyl. Mèth. x, 805, 1825.

americana Schiner, Novara Exped. 367.—S. America.

STILBOSOMA.

Philippi, Verh. Zool. Bot. Gesellsch. xv, 737, 1865.

cyanea Philippi, Verh. Zool. Bot. Gesellsch. xv, 737.—Chili.

nigricornis Philippi, Verh. Zool. Bot. Gesellsch. xv, 737.—Chili.

ruficeps Philippi, Verh. Zool. Bot. Gesellsch. xv, 737; Schiner, Novara Exped. 366, pl. iv, fig. 5.—Chili.

STERPHUS.

Philippi, Verh. Zool. Bot. Gesellsch. xv, 735, 1865.

antennalis Philippi, Verh. Zool. Bot. Gesellsch. xv, 735. 1, pl. 27, fig. 37 (*autumnalis*); v. d. Wulp, Tijdschr. v. Ent. xxv, 133.—Chili. [Dr. Gerstaecker, from an examination of this species, believed it to be a *Xylota*.]

flavipes Philippi, Verh. Zool. Bot. Gesellsch. xv, 737.—Chili.

cyanocephalus Philippi, Verh. Zool. Bot. Gesellsch. xv, 738.—Chili.

MACROMETOPIA.

Philippi, Verh. Zool. Bot. Gesellsch. xv, 740, 1865.

atra Philippi, Verh. Zool. Bot. Gesellsch. xv, 740, pl. xxvii, fig. 39.—Chili.

CRIORHINA.

Macquart, Hist. Nat. Dipt. i, 1834.

aureorufa Philippi, Verh. Zool. Bot. Gesellsch. xv, 736, pl. xxvi, fig. 36 (*Eriophora*).—Chili.

CERIA.

barbipes Loew, Neue Beitr. i, 19, 18; v. d. Wulp, Tijdschr. v. Entom. xxv, 122.—Argentina.

Species described by Walker.

Microdon bicolor Walker, Trans. Entom. Soc. Lond. iv, 151 (*Ceratophyia*).—Para.
flavitibia Walker, Dipt. Saunders, 217, pl. v, fig. 2 (*Ubristes*).—Brazil.
luridescens Walker, Trans. Entom. Soc. Lond. iv, 151 (*Ceratophyia*).—Amazon.

Paragus maculatus Walker, Dipt. Saunders, i, 220.—Brazil.
scutellatus Walker, Linn. Trans. xvii, 242, 29.—Brazil. [The clubbed and banded abdomen renders the location here impossible; possibly it is a *Mixogaster*.]

Pipiza costalis Walker, Linn. Trans. xvii, 342, 31.
dolosa Walker, Trans. Entom. Soc. Lond. iv, 156.—Amazon.
longicornis Walker, Linn. Trans. xvii, 343, 32.
pica Walker, Trans. Entom. Soc. Lond. iv, 156.—Amazon.
sericea Walker, Linn. Trans. xvii, 343, 33.

Rhoga lutescens Walker, Trans. Entom. Soc. Lond. iv, 157.—Para. [The genus *Rhoga*, here characterized, is placed by the author near *Paragus*.]

Syrphus basilaris Walker, Linn. Trans. xvii, 345, 37. ["5mm. Abdomen æneo-fuscum."]
Caldus Walker, Dipt. Saunders, i, 232.—Brazil.
Barbula Walker, Dipt. Saunders, i, 238.—Brazil.
iridipennis Walker, Linn. Trans. xvii, 245, 38. ["7 mm. *S. obscuro similis.*" *Melanostoma?*]
Laenas Walker, Dipt. Saunders, 241.—Brazil.
Portius Walker, Dipt. Saunders, i, 239.—Brazil.
octomaculatus Walker, Linn. Trans. xvii, 344, 34.—Brazil.
Stolo Walker, Dipt. Saunders, i, 241.—Brazil.
subchalybeus Walker, Trans. Entom. Soc. Lond. iv, 150.—Amazon.
tarsalis Walker, Linn. Trans. xvii, 345, 39. [*Ocyptamus?*]
unicolor Walker, Linn. Trans. xvii, 344, 36.—Straits of Magellan. ["4 mm. *Chalybeo ater, pedibus rufis, nigro variegatus, alis hyalinis.*" Evidently no *Syrphus*.]
Vatia Walker, Dipt. Saunders, i, 240.—Brazil.

Baccha crassa Walker, Dipt. Saunders, i, 222.—Brazil.
inornata Walker, Linn. Trans. xvii, 342, 30.—Brazil.
oblonga Walker, Dipt. Saunders, i, 221.—Brazil.
tenuis Walker, Dipt. Saunders, i, 222.—Brazil.

Salpingogaster costalis Walker, Dipt. Saunders, 223 (*Amathia*).—Brazil. [For the synonymy of *Amathia*, compare Schiner, Novara Exped. 344.]

Ascia Anthermus Walker, List, etc., iii, 547.—Para. [Not an *Ascia*; *Baccha?*]
striata Walker, Dipt. Saunders, i, 242.—Brazil.

Temnocera circumdata Walker, Trans. Ent. Soc. Lond. iv, 154.—Amazon.
integra Walker, Trans. Ent. Soc. Lond. iv, 155.—Amazon.
trifascia Walker, Trans. Ent. Soc. Lond. iv, 154.—Para.

Eristalis lateralis Walker, Linn. Trans. xvii, 347; List, etc., iii, 622.—Chili, Guiana, Mexico, Jamaica.

basiger Walker, Trans. Entom. Soc. Lond. v, 288.—Amazon.
floridus Walker, Dipt. Saunders, i, 245.--Brazil.
Helophilus auratus Walker, Trans. Entom. Soc. Lond. iv, 153.—Amazon.
chilensis Walker, see *Dolichogyna*.
scitus Walker, Trans. Ent. Soc. Lond. iv, 152.—Amazon.
Merodon bicolor Walker, Dipt. Saunders, i, 243.—Brazil.
Syritta transversa Walker, Trans. Entom. Soc. Lond. iv, 153.—Amazon.
Milesia laconica Walker, Dipt. Saunders, i, 227.—Brazil.

ACROCHORDONODES, see **Senogaster.**
AMATHIA, see **Salpingogaster.**
ASCIA, see **Sphegina.**
APHRITIS, see **Microdon.**
ATEMNOCERA, see **Volucella.**
CERATOPHYIA, see **Microdon.**
CHEILOSIA, see **Pipiza.**
ERIOPHORA, see **Criorhina.**
ERISTALOMYIA, see **Eristalis.**
IMATISMA, see **Mallota.**
LEJOPS, see **Mallota.**
MERODON, see **Sphegina.**
MESOGRAMMA, see **Mesograpta.**
MILESIA, see **Pteroptila** and **Senogaster.**
ORTHONEURA, see **Chrysogaster.**
PENIUM, see **Pipiza.**
PLANES, see **Xylota.**
PRIOMERUS, see **Myiolepta** and **Eristalis.**
PLAGIOCERA, see **Pteroptila** and **Mallota.**
SPHIXEA, see **Pteroptila.**
UBRISTES, see **Microdon.**
XILOTEJA, see **Myiolepta.**

Contributions to a Knowledge of the LEPIDOPTERA of West Africa.

BY REV. W. J. HOLLAND, M.A., PH.D.

PAPER I.

I propose in a series of papers to present the results of the study of a large body of interesting material received by me during recent years from the Western Coast of Africa, for much of which I am indebted to my friend, the Rev. A. C. Good, whose many excellences, both as a Christian minister and as an enthusiastic observer of nature, are forthshadowed by his patronymic. In the following pages I present descriptions of three species of diurnal Lepidoptera which I believe to be new to science; and I also present descriptions of the females of three species hitherto only known in the male sex. In all cases figures are given, and if I have been inadvertently led into creating synonyms, those of larger knowledge than myself will quickly detect the fact by means of the plates. In that event I shall be happy to have my error pointed out to me.

List of Species.

1. LACHNOPTERA LAODICE, Cram. ♀.
2. ERGOLIS ACTISANES, Hew. ♀.
3. CRENIS AMULIA, Cram. ♀.
4. EURYPHENE GOODII, n. sp. ♂
5. CHARAXES OGOVENSIS, n. sp. ♂
6. CHARAXES TALAGUGÆ, n. sp. ♂

Subfamily NYMPHALINÆ, Bates.

Genus **LACHNOPTERA*** Doubleday.

Issoria, Hübner.

The males of this genus, of which but two species are as yet known, are remarkable for the large patch of dark hair-like scales near the costal margin of the posterior wings. With the exception of the

* The generic name given by Doubleday in the "Genera of Diurnal Lepidoptera" is undoubtedly more felicitous than that bestowed by Hübner, being in a measure descriptive, yet the name given by Hübner has the priority, and is set aside by Doubleday without assigning a reason so far as I have observed. Nevertheless, inasmuch as Trimen and Butler both accept the name given by Doubleday I hesitate, at least for the present, to restore that of Hübner.

genus *Terinos*, which is East Indian, there is no other genus included in the *Nymphalinæ* proper, which presents a like phenomenon. On the other hand the males of many genera included in the *Satyrinæ* are furnished with patches and tufts of long hair-like scales. These appendages are doubtless sexual.

Lachnoptera Laodice, Cram. PL. IX, FIG. 2, Dimorphic ♀.
Papilio Laodice, Cram. (nec Pallas; Pap. Exot. II, t. 157, E. F. ♂ (1779).
Papilio Iole, Fabr. Spec. Ins. II, p. 78, No. 348 (1781).
Issoria Anticlia, Hübn. Verz. Bek. Schmett. p. 31 (1816).
Argynnis Iole, Godt. Enc. Meth. ix, p. 260 (1819).
Lachnoptera Iole, Doubl.-Hew. Gen. D. L. p. 161, t. xxii, fig. 2 ♂ (1848).
Lachnoptera Laodice, Butl. Cat. Fabr. Diurn. Lep. p. 116 (1869).
Lachnoptera Iole, Staudinger, Exot. Schmett. p. 89, Pl. 35, ♂ (1885).

FEMALE.—*Typical form.** Wings somewhat broader, and less acute at the apex, than in the male. A small caruncula or ridge upon upper surface of posteriors at the end of the cell. This is found in all females, never in males. The basal area of the *upper surface* of both primaries and secondaries is dark fulvous, the outer half of the wings light fulvous, the division between the darker and lighter areas being marked by an irregularly waved and toothed line of dark fuscous, heaviest upon the costal margin of the primaries. The end of the cell of the primaries is also indicated by a line of fuscous. The purplish iridescence discernible in certain lights upon the wings of the male is lacking in the female. A row of six sagittate black spots, one for each intra-neural space extends across the primaries about one-fourth of the distance from the margin. This band of sagittate marks is continued on the secondaries parallel

* Mr. Doubleday at the time of the publication of the "Genera of Diurnal Lepidoptera" did not know the female, though acquainted with the male by numerous examples. Mr. A. G. Butler tells us in his "Catalogue of the Fabrician Diurnal Lepidoptera" that the types of both the male and the female of this species "agreeing in the fulvous ground-color of the wings" are contained in the British Museum as part of the Banksian Collection, and calls attention to a white form of the female from Gaboon "which mimics *Harma Althea*." Mr. Trimen in the "Transactions of the Ent. Soc. of London," vol. xxvii, p. 328, incidentally alludes to "the butterfly which the late Mr. Hewitson referred (I believe rightly) to the female sex of *Iole*, which I noted as 'fuscous; all the outer area of the wings dull white, with the spots and streaks strongly and blackly marked; markings of the under surface agreeing with those of *Iole* ♂'." These are the only references I find to the female of this interesting species after an exhaustive search of the entire literature of the subject, and I have been, therefore, emboldened to give a full description of the two forms of the female, of which several examples have come into my possession.

to the outer margin, gradually passing toward the anal angle into a continuous zigzag line. This series of sagittate spots and lines are followed on both primaries and secondaries by a submarginal line of black, acutely angulated at the middle of each intra-neural space, and this is succeeded on both wings by a marginal line also of black. Between these two lines the ground color appears as a series of fulvous lunules. Near the apex of the secondaries, in the region covered in the male by the oval patch of dark leaden-hued, hair-like scales, characteristic of the genus, are three heavy, oval, black spots, of which the one in the middle is the largest, and the first is fused at the costal margin with the row of sagittate spots already described. Two similar, but smaller spots, are found, one near the anal angle and the other in the preceding intra-neural space. Fringe dark brown. The *under surface* is much lighter than the upper, and altogether lacking the purplish iridescence of the males. The markings are as above, but very faint, except in the case of the last of the band of sagittate spots on the primaries, which is heavy and black, and the oval spots of the secondaries, which reappear on the under surface as black ocelli, pupilled with white and surrounded by an ochraceous ring. On their inner margin these ocelli are bounded by silvery spots resembling those found in the genus *Argynnis*. One female; expanse 2½ inches.

Ogové River, W. Africa.

DIMORPHIC FEMALE.—The dark fulvous of the basal area of the *upper surface* of the wings of the typical female is replaced in this form by dark fuscous, having an olivaceous tint, and shading into black near the middle of the wings. The light fulvous of the outer half of the wings of the typical female is replaced by white, having a lilacine lustre. The spots and lines are as in the typical form, but broader and running together. The apices of both anterior and posterior wings are also more or less clouded with fuscous, somewhat obscuring the markings. The *under surface* is lilacine gray and white, with the markings as in the typical form, but more distinct. Head, thorax and abdomen concolorous. Four females; exp. 2¼ in.

Ogové River, Gaboon, W. Africa.

Genus **ERGOLIS** Boisduval.

Ergolis Actisanes Hew., PL. IX, FIG. 3, ♀.

Ergolis Actisanes, 1 Hewitson, Ent. Mo. Mag. xi, p. 183, ♂ (1874).

FEMALE.—*Upper surface* dark rufous brown at the base of both wings, becoming lighter toward the outer margin, especially of the

primaries. Both wings crossed near the base and at the middle by three bands of dark red margined by black. Of these bands the one near the middle is the widest. Both wings crossed beyond the middle by a band of broad lunules, compressed and fused at the nervules, of a light fawn color, with dark sagittate marks in the centre and surrounded by dark brown outer shades. These markings grow gradually darker from the costa of the anterior wings toward the anal angle of the posteriors. The cell in both anterior and posterior wings crossed near the middle and at the end by geminate black lines, the spaces between which are light rufous. Anterior wings with a marginal line of black; posterior with geminate submarginal lines, the interspace being rufous brown. A white, subapical spot on primaries. Fringe white. *Under surface* as the upper, but the marginal area much lighter, save at apex, and the spots and lines broader and heavier though less sharply defined, and more prevalently rufous than on the upper side. Palpi, thorax and abdomen concolorous. Expanse of wings 2⅛ inches.

Described from one imperfect ♀ in coll. Holland, from Ogové River, W. Africa.

This is, as Mr. Hewitson remarks, "the largest species of the genus."

Genus **CRENIS**, Boisduval.
Myscelia, Sect. 4. *Crenis*, Doubleday.

Eunica, p. Felder.

Crenis Amulia, Cram. PLATE IX, FIG. 1, ♀.
Papilio Amulia Cram. Pap. Exot. II, t, 180, C (1779).
Papilio Amalia (sic.), Fabr. Ent. Syst. III, i. p. 129, No. 398 (1793).
Nymphalis Amulia Godt. Enc. Meth. IX, p. 388, No. 135 (1823).
Papilio Amalia, Donovan, Nat. Rep. II, t. 40, fig. 2 (1824).
Crenis Amulia, Butl. Proc. Zool. Soc. London, 1868, p. 222, t. 17, figs. 3, 4.

FEMALE.—*Upper surface* of primaries and secondaries brown, giving off in certain lights a brilliant pink-purple reflection, not, however, as intense as in the male. Apex and outer margin of the *primaries* deep brown or black. Three black spots just beyond the cell of primaries unite to form a dark transverse shade, or fascia, extending from the costa half way across the wing toward the inner angle. The space between this shade and the dark shading of the apex is much lighter, but broken by the nervules, which are shaded on either side by black, and by a black subapical spot situated between the fifth subcostal and the discoidal nervule. Posterior wings with the markings of the under surface more or less distinctly visible

on the upper surface, appearing as indistinct dark lines in the basal and discoidal area and as a submarginal band of five oval black spots. Marginal band and margin black. Fringes cinereous. *Under surface* bright orange, shaded with darker orange. *Anterior wings* with three somewhat sagittate, black spots beyond the cell, and a faint brown shade between the first and second median nervules, and a large oval black spot between the fifth subcostal and the discoidal nervule. Above this oval spot two minute light blue spots, pupilled with dark blue. A series of light blue lunules shaded inwardly with black extend from the apex, where they are widest, along the outer margin as far as the second discoidal nervule; margin black; fringe white. *Posterior wings* crossed near the middle of the cell by two irregular bands of very dark purple or blue-black, the innermost bordered on the side of the base, and the outermost bordered on both sides by light ultramarine blue. The middle of the marginal area traversed by a row of seven oval spots of bright ultramarine pupilled with dark blue-black, these spots diminishing in size from the middle towards the costal and anal margins. A submarginal line of black, followed by a line of light blue; outer margin black; inner margin broadly blue, dusted with black scales; fringe white; upper surface of palpi, head, thorax and abdomen of same general color as upper surface of wing; under surface of palpi and abdomen bluish white; antennæ dark fulvous. Expanse of wings 2¼ inches.

Described from one female in coll. Holland, from Ogové River, W. Africa.

Cramer, Donovan, and Butler have figured the male of this exquisite species, but the female, which is somewhat less brilliant than the male, has never hitherto been described or figured.

Genus **EURYPHENE**, Boisd.

Enryphene Goodii n. sp. PL. VIII, FIG. 1, ♂.

MALE.—The form of the wings resembles that of *E. Plautilla*, Hew., but with the outer margin more produced at the extremity of the third median nervule. *Upper surface* of both wings bright rufous, with costal and outer margins shaded with dark brown, passing at apex of primaries into black. *Primaries* with a small, annular, black mark at base of cell, in the middle of the cell a figure "8" mark, and at the end of the cell three black lines, the innermost of which is narrow and faint, and the two outermost heavy and irregular fusing

together at extremities and forming a crescent. Beyond these lines is a series of irregular dark shades, produced along the nervules, and bordered externally by light fulvous; these are followed by a series of subapical dark marks and a submarginal row of dark spots, of which the three nearest the apex are the darkest. *Secondaries* with two annular marks in cell, the uppermost the largest, and an elongated, oval mark at end of cell. Internal margin clothed with long brown hairs; anal groove pale straw-color. Head and thorax olive-brown, abdomen rufous. *Underside of primaries* at apex and on cell lilacine white. The remainder of the primaries broadly rufous brown, lighter toward inner angle. The spots and lines in the cell and the submarginal row of dark spots as upon the upper surface. A row of narrow white lunules, bordered on the side of the base with black, begins at the middle of the space between the second discoidal and the first median nervule, and runs to the posterior margin, nearly parallel to the costal margin. The ground color of the *underside of the secondaries* is on the basal area lilacine white, on the outer half of the wing light stone gray with a reddish tint. Anterior margin broadly black, shading near base and outer angle into maroon. This broad band is broken about half way from the base by a nearly white spot having the form of an inverted comma. A broad, but very irregular maroon-black band originating at the point marked by this comma-like spot, and fusing with the broad band on the anterior margin crosses the wing transversely at the middle and terminates just before reaching the posterior margin. The broad, white, discocellular space enclosed between these dark bands is marked by three very dark spots, the two uppermost of which are more or less confluent with the dark band of the anterior margin. Underside of palpi, breast and abdomen, white. Alar expanse 2¾ inches.

Described from one imperfect male in coll. Holland, from Ogové River, W. Africa.

I dedicate this fine species to my good friend, Mr. Good, its captor.

Genus **CHARAXES**, Ochsenheimer.

Nymphalis, Latr.

Charaxes Ogovensis n. sp. PL. VIII, FIG. 2, ♂.

MALE.—Anterior wings well rounded on costa, subfalcate at apex, deeply excavated on outer margin opposite cell, rectangular at inner angle. Posterior wings well rounded on outer margin, regularly toothed at extremities of nervules, but *without tails*. The ground

color of the primaries and secondaries is rich rufous, deepest at base. The *primaries* have a black spot in the middle of the cell, and a large black crescent at the end of the cell, two oval and somewhat confluent subapical black spots, one near the origin of the first median, and the other near the origin of the second median nervule. A broad black band irregularly toothed inwardly, and regularly toothed externally extends from the apex to the posterior margin. This is followed by a row of bright red lunules gradually increasing in size from the apex to the posterior margin, and these are followed by a marginal band of dark fuscous. The broad black band of the primaries is continued upon the *secondaries*, and is at first quite narrow upon the costal margin, but rapidly widening and sweeping toward the base and the anal angle, covers almost the entire basal two-thirds of the wing, except an oval spot of light red on the costal margin above the cell. The outer third is bright red embellished by a submarginal band of ocelliform black spots pupilled with dark red. Of these spots the two at the anal angle are very small the four in the middle large and heavy, and confluent at the nervules, and the two nearest the outer angle small and lighter in color. The *underside* of primaries and secondaries is much lighter than the upper side and have a bright purplish sheen over the entire surface. Three small bluish white spots mark the apex of the primaries, a narrow band of dark rufous extends from the apex across both wings vanishing before reaching the anal angle of the secondaries. A small dark brown spot appears near the basal extremity of the cell in the *primaries*, and is followed by a mark of the same color resembling the figure "2". A dark oval blotch margined with very dark brown appears at the end of the cell, and is followed by two dark oval spots between the cell and the apex near the costa. There are three oval spots margined with dark brown between the median nervules near their origin. The *posterior* wings are traversed by two very irregular and broken bands of narrow brown lines, one crossing the middle of the cell, and the other its outer extremity. A submarginal row of minute, bluish white spots takes the place of the row of heavy ocellated spots which appears on the upper side. The color of the upper and under surface of the body harmonizes with the tint of the adjacent wing surfaces.

In certain lights the upper surface of this beautiful insect, which in coloration bears a superficial resemblance to *Charaxes Lucretia*

Cram., reveals a most magnificent purple iridescence like that of *Apatura Iris* Linn. Expanse of wings 2¼ inches.

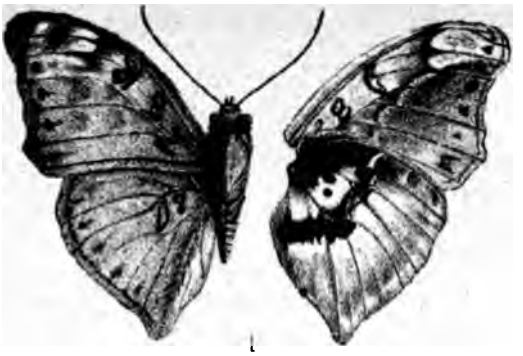
Described from one male in coll. Holland, from Ogové River, W. Africa.

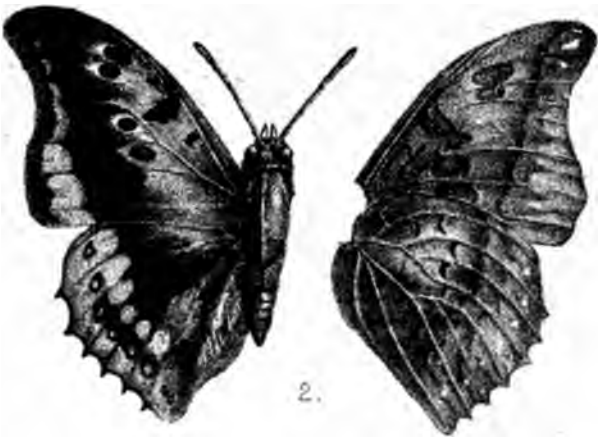
Charaxes Talaguga n. sp. PL. VIII, FIG. 3, ♂.

MALE.—The outline of the wings is similar to that of *C. Ephyra* Godt., ♂. The *upper surface* of primaries and secondaries is dark velvety black with a greenish reflection. A macular band of white extends beyond the middle across both wings gradually widening from near the apex of the primaries, where the spots composing it are mere narrow streaklets, to the inner margin of the anal groove of the secondaries, where it abruptly terminates. This white band is margined on its exterior in the primaries, and on both sides in the secondaries by a bluish green shade. The ground color of the *under surface* of both wings is a lavender gray. Both wings are traversed as on the upper surface by the white macular band. The other markings are as follows: a small oblong black spot at base of cell in the *primaries*, two small round spots arranged vertically upon middle of cell, followed by a narrow and obtusely angled black line, and a curved line at end of cell. Two narrow vertical lines, one above, the other below the third median nervule near its origin; three narrow, vertical black lines bounding the inner margin of so much of the white macular band as lies between the median nervules, a broad geminate black shade near the inner angle of the primaries. Two narrow black lines cross the cell of the *secondaries*, the outermost being produced upwards to the costal margin. A submarginal band of faint olive-green lunules bordered on both sides by narrow black lines crosses the secondaries, which are also adorned by a marginal series of small black points edged inwardly with pale blue. The upper surface of the palpi, head, thorax and abdomen are black. Four minute white spots ornament the head, and two each of the patagia. The underside of the palpi and the breast are snowy white. The sides of the thorax beneath and the legs of the same gray color as the adjacent parts of the wings, the underside of the abdomen is yellowish white.

Described from one slightly damaged male in coll. Holland, from Ogové River, W. Africa.

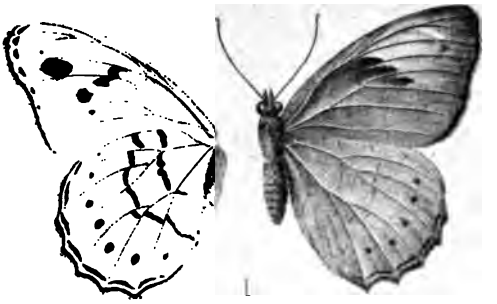
PITTSBURGH, PA., Nov. 10, 1886.



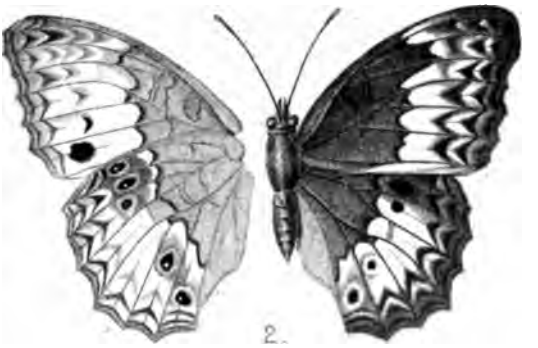


2.

3.



1.



2.

3.

PROCEEDINGS
OF THE
MONTHLY MEETINGS
OF THE
ENTOMOLOGICAL SECTION
OF THE
ACADEMY OF NATURAL SCIENCES,
PHILADELPHIA.

JANUARY 28, 1886.

Director Dr. HORN in the chair.

The Publication Committee reported in favor of publishing the following papers in the Transactions of the Society:

A biographical and synonymical catalogue of the North American Cynipidæ, with descriptions of new species, by Wm. H. Ashmead.

Dinapate Wrightii and its larva, by George H. Horn, M. D.

A monograph of the species of the sub-families Eucneminæ, Cerophytinæ and Perothopinæ, inhabiting the United States, by George H. Horn, M. D.

A monograph of the species of Chrysobothris inhabiting the United States, by George H. Horn, M. D.

The reports were accepted and the publication ordered.

The special committee to audit the accounts of the Treasurer reported that they had examined the accounts and found them correct.

Paper 192 was read by title and referred to the Publication Committee.

The following additions to the Library of the American Entomological Society were read as follows:

Entomologica Americana, vol. i, No. 10. From the Editor.

Entomologists' Monthly Magazine, January, 1886. From the Conductors.

On the structure of the Brain of the Sessile-eyed Crustacea, by A. S. Packard, Jr., M. D. From the Author.

New genera and species of Californian Coleoptera, by Thomas L. Casey. From the Author.

Myriapoda Musei Cantabrigensis, part 1. From the Author.

Dr. Horn exhibited the drawings to illustrate his monograph of Chrysobothris and explained the sexual characters.

Mr. Philip Laurent was elected a member.

FEBRUARY 25, 1886.

Director Dr. HORN in the chair.

The Publication Committee reported in favor of publishing paper 192, entitled:

Synopsis of the North American sub-families and genera of Cynipidæ, by William H. Ashmead.

The following additions to the Library of the American Entomological Society were read as follows:

Entomologica Americana, vol. i, No. 12. From the Editor.

Canadian Entomologist, January, 1886. From the Editor.

Proceedings Academy of Natural Sciences, Philadelphia, 1885. Part 3. From the Academy.

Journal of the Cincinnati Society of Natural History, January, 1886. From the Society.

Le Naturaliste Canadien, December, 1885–February, 1886. From the Editor.

Entomologists' Monthly Magazine, February, 1886. From the Conductors.

Proceedings Zoological Society of London, 1885. Part 2. From the Society.

Journal and Proceedings of Royal Society of New South Wales, vol. xviii, 1884. From the Society.

Annales de la Société Entomologique de Belgique, vol. xxix. Part 2. From the Society.

Berliner Entomologische Zeitschrift, 1885. From the Society.

Paper 193 was read by title and referred to the Publication Committee.

An envelope containing leaves with numerous Thrips from Mauna Leo, Porto Rico, W. I., collected by Dr. Antonio Jose Amadeo, was presented by Dr. Joseph Leidy.

MARCH 25, 1886.

Director Dr. HORN in the chair.

The Publication Committee reported in favor of publishing paper 193, entitled:

Studies on the North American Chalcididæ, with descriptions of new species from Florida, by William H. Ashmead.

The same Committee placed on the table the concluding part of vol. xii of the Transactions of the American Entomological Society and Proceedings of the Entomological Section of the Academy of Natural Sciences and reported that ninety-six pages with seven plates of vol. xiii had been completed.

Mr. Cresson reported that the Hymenoptera which had been placed in the hands of Mr. W. H. Patton for study in 1879, had been returned. The condition of Mr. Patton's health was such that he might not possibly recover; in the mean time the entire cabinet of Mr. Patton was placed in the Society's care. The collection contains much valuable material.

The following additions to the Library of the American Entomological Society were read as follows:

Canadien Entomologist, vol. xviii, No. 2. From the Editor.

Entomologia Americana, vol, ii, No. 1. From the Editor.

Entomologists' Monthly Magazine, March, 1886. From the Conductors.

Comptes-Rendus des Sciences, Sèr. iii, No. 69. From the Editor.

Bulletin Société Impériale des Naturalistes de Moscow, 1885, Nos. 1 and 2. From the Society.

APRIL 22, 1886.

Director Dr. HORN in the chair.

The Publication Committee reported that the Transactions to the conclusion of Dr. Horn's paper, p. 124, on Chrysobothris, had been completed.

Mr. S. F. Aaron exhibited some specimens of Diptera and Hymenoptera exhibiting a great superficial resemblance.

The question of mimicry was discussed by the members, and instances of so-called mimicry were cited in which the habitats of the species were so remote as to preclude the idea of protection or any other of the assumed reasons for the similarity.

Paper 194 was read, and on motion referred to the Publication Committee.

The following additions to the Library of the American Entomological Society were read as follows:

Canadian Entomologist, vol. xviii, No. 3. From the Editor.

Bulletin Buffalo Society of Natural Sciences, vol. v, No. 1. From the Society.

Bulletin Washburn College Laboratory of Natural History, vol. i, No. 4. From the Editor.

Proceedings Boston Society of Natural History, vol. xxiii, sig. 13, 14. From the Society.

Entomologists' Monthly Magazine, April, 1886. From the Conductors.

Proceedings Entomological Society of Washington, D. C., vol. i, No. 1. From the Society.

Transactions Entomological Society of London, 1885. From the Society.

Journal Bombay Natural History Society, vol. i, No. 1. From the Society.

Comptes-Rendus des Sciences Sèr. iii, No. 70. From the Editor.

Entomologisk Tidskrift, 1885, Heft 1–4, af Jacob Spangberg. From the Author.

Verhandlungen Zoolog.-botan. Gesellschaft in Wien, Band 35, No. 2, 1885. From the Society.

Bulletin Société Impériale des Naturalistes de Moscow, 1884, No. 4. From the Society.

Systematische übersicht der Fossilen Myriapoden, Arachnoideen und Insekten, von S. H. Scudder. From the Author.

On some new Psocidæ, by S. Frank Aaron. From the Author.

Reports of experiments with various Insecticide substances chiefly affecting Garden Crops, made under direction of the Entomologist C. V. Riley. From the Author.

Revision of the Californian species of Lithocharis and allied genera, by Thomas L. Casey, 1886. From the Author.

Biologia Centrali-Americana. Part 45, February, 1886. By purchase.

MAY 27, 1886.

Director Dr. HORN in the chair.

The Publication Committee reported in favor of publishing paper 194, entitled:

Review of the Species described by Olivier in the "Entomologie," by George H. Horn, M. D.

They also reported that part 2 of the Transactions had been completed to p. 144; the number will be issued as soon as the Proceedings are printed.

Mr. Cresson reported that the committee appointed by the American Entomological Society had chosen George B. Cresson as the Custodian of the Collections and Library for the balance of the year.

Dr. Horn read a brief sketch of our late member, Mr. Charles Wilt, which was ordered published in the Proceedings.

Dr. Horn also read some notes made on a recent visit to Cambridge, also a brief review of the two volumes of the "Biologia Centrali-Americana" Coleoptera, that are complete. These were ordered published in the Proceedings.

The following additions to the Library of the American Entomological Society were read as follows:

Le Naturaliste Canadien, April, 1886. From the Editor.

Insects affecting the Orange, by H. G. Hubbard. From the Author.

Entomologica Americana, April, 1886. From the Editor.

Canadien Entomologist, vol. xviii, No. 4. From the Editor.

Proceedings Boston Society of Natural History, vol. xxiii, sig. 15, pp. 225–240. From the Society.

Bulletin Museum of Comparative Zoölogy, vol. xii, Nos. 3 and 4. From the Museum.

Entomologische Zeitung, herausgegeben von dem Entomologischen Vereine zu Stettin, vol. xlvi. From the Society.

Biologia Centrali-Americana. Coleoptera, vol. iii, part 2, pp. 313–36; vol. iv, part 1, pp. 137–52; vol. vi, part 2, pp. 97–112, pl. 4. Hymenoptera, pp. 265–288, pl. 12. Heterocera, vol. i, pp. 161–68. By purchase.

Nunquam Otiosus, Schaufuss. Parts 1–3. By purchase.

Opuscula Entomologica, Thomson, parts 6–10. By purchase.

Apidæ Europæa, Schmiedekneckt, parts 1–10. By purchase.

MR. CHARLES WILT.

In 1859 a few friends met to consider the formation of an entomological society, and in response to the call Mr. Wilt was one of fifteen who assembled. The organization was soon completed, and Mr. Wilt became treasurer March 14th of that year, remaining in that position until the close of 1863.

For nearly a year the Society met at the houses of its members until it was resolved that a library and cabinet would be necessary to aid the members in their studies. The difficulty of finding a home for the Society was solved by Mr. Wilt, who placed at its disposal the large saloon-room of his house, then recently built, and from Jan. 9, 1860, until August, 1862, these comfortable quarters were occupied without expense to the Society, and in this room the first volume of our Proceedings was printed—on a small hand-press—page by page.

The interest taken by Mr. Wilt in the Society increased with its progress, and no one was more ready to respond to any call for personal or pecuniary assistance than he. While not an active student of entomology he kept himself well advised in whatever related to its progress, especially in the fauna of our country. His interest was concentrated in the two orders COLEOPTERA and LEPIDOPTERA, and by liberal purchases and constant exchanges he accumulated a collection of the former order standing high in rank in our country, while in certain portions of the LEPIDOPTERA, the Sphingidæ and Catocalæ, his series has but few, if any, superiors.

His cabinet was at all times freely at the disposal of others, and very many of his friends were accustomed to use it in naming their local captures. To those who desired the use of his material for more thorough study he was especially kind in loan and gift, as it has been my pleasure on many occasions to testify.

Of the life of Mr. Wilt apart from his connection with our Society very little need be said. With an early training to mercantile pursuits he continued in business until his death, acquiring a competency, which enabled him to indulge his love for entomology.

Mr. Charles Wilt was born June 12, 1821, and died April 3, 1886.

GEO. H. HORN, M. D.

Notes on the "Biologia Centrali-Americana."

BY GEO. H. HORN, M. D.

Students of the natural history of the North American continent have much to be thankful for in the progress of the important work undertaken under the editorship of Messrs. Godman and Salvin, with the collaboration of those whose names scarcely need any additional lustre from the "Biologia."

The work aims to embrace that portion of the continent of North America south of the boundary line of the United States and including the Isthmus of Panama. From a political stand-point the Peninsula of California should have been included, but it has been omitted, from the fact that many of the species have been described by Dr. LeConte and myself, showing that the fauna of that region (with the exception of the extreme southern end) is much more closely related to our Arizona region than would be any similar southern extension from the boundary line of Arizona.

The territory along the boundary line is for the most part an inhospitable region—hot, dry and barren, with occasional more or less fertile valleys extending in a general direction N. W. to S. E. Some of these valleys are properly Arizonian extensions, others extend upwards from Mexico. The latter case prevails in the northwestern portion of Mexico, while the reverse exists in the northeast, in the region west of the Rio Grande. This results in a preponderance of the species of the region from which the fertile peninsula arises. The broad belt of desert, hot and rainless, east and southeast of Fort Yuma seems to act as an effectual barrier against the intermingling of the species of the two faunas to any notable extent.

The collection made by Morrison teaches very little. How far he went below the boundary I do not know, although my series was purchased as from Arizona purely, and the same series is quoted by the authors of the "Biologia" as from northern Sonora. With very few exceptions the series was such as we are accustomed to meet in Arizona with no greater admixture of Mexican forms than we find on the Texas side of the Rio Grande.

On the whole the two faunas, Boreal and Central America, seem to be quite distinctly marked, more so than would be expected from the topography of the greater part of the border zone as there are no natural obstructions—as high mountains or wide seas—in the way of a free intermingling of species.

These remarks, which must be restricted in their application to the Coleoptera alone, express the views entertained by Dr. LeConte and explained in his notes on the first series of Coleoptera collected by Xantus in the Peninsula of California. Mr. H. W. Bates seems to have adopted what is practically the same idea, as I have gathered from his introduction to vol. i, and isolated expressions more particularly in the Appendix.

To students of the Coleopterous fauna of the more northern portions of the continent the work is indispensable, and will doubtless diminish in future the duplication of descriptions of species on the two sides of the line. It is only to be regretted that the authors have satisfied themselves with cataloguing very many of the species, giving, often, too abundant citations of habitat in place of a few lines of description, which would have been of far greater utility.

The first volume of COLEOPTERA deals with the Cicindelidæ and Carabidæ, and is from the hands of Mr. H. W. Bates. It contains 316 pages and 13 plates, on which are figures of 323 species and varieties. Publication of the volume began in October, 1881, and finished in August, 1884. In going over the pages a few notes have been made, which have been thought of sufficient interest to give:

Iresia boucardi *Chev.*, p. 17. A male of this species taken at Cordova by José Nieto, and now in my possession, is entirely rufo-testaceous beneath. The male was unknown to Mr. Bates, and it is probable that he is entirely correct in separating *Iresia pulchra* as distinct.

Calosoma peregrinator *Guer.* As this species has *C. carbonatum* Lec. for a synonym, the remarks concerning *prominens* and *lugubre* Lec., should be disregarded.

Micrixys distinctus *Lec.* This species should be added on p. 41. I have seen a specimen in the possession of Mr. Flohr, collected (I think in Coahuila) in Mexican territory.

Dicaelus flohri *Bates*, p. 49. Mr. Bates is correct in referring (on p. 269) this species to *lævipennis* Lec.

A second species, *D. costatus* Lec., occurs in Mexico (see preceding note).

On p. 73 Mr. Bates seems to have doubts as to the position of Polpochila. The difficulty seems capable of solution by accepting as groups (or whatever else they may be called) those aggregations of genera with male tarsi dilated and (1) biseriately squamose, or (2) spongy pubescent, and (3) those with undilated male tarsi with few or no squamules. While it is inferentially stated here that I have suggested too many subdivisions I am reminded on p. 75 that I have not made quite enough.

Evarthrus constrictus *Bates*, p. 80. This name is preoccupied in the genus and in the series with bisetose labial palpi.

Blechrus glabratus *Dufts.*, p. 192. This European species is quoted from California. That the *nigrinus* Mann., is a Blechrus is undoubted, as LeConte had a type from Mannerheim. It is highly probable that the *nigrinus* is *glabratus*. I am not aware that Metabletus occurs in California, but it is known from British Columbia, etc.

On p. 220 Mr. Bates intimates that I consider *Loxopeza majuscula* Chd., a synonym of *L. grandis* Hentz (not Hald.). All my publications have been quite to the contrary.

The *Discoderus* mentioned on p. 276, as number 10, had been described by me as *robustus*.

With page 256 of this volume the supplementary part begins, in which we find introduced the species collected by Mr. Morrison. On going over these latter it will be observed that, with extremely few exceptions, all had been described from our territory.

It seems worthy of special note that *Scaphinotus mexicanus* is the only Cychride described or recorded, while in California species of the subgenus *Brennus* are numerous. Arizona has not, to my knowledge, furnished even a specimen of Cychride, while the adjacent region of New Mexico furnishes *Scaphinotus Snowii* Lec., and northward in Colorado we find only *S. elevatus*.

The occurrence of a species of Carabus is remarkable. In Calosoma the fauna of Mexico is unexpectedly less rich than our own, twenty being enumerated from Mexico and twenty-six with us. Three are common to the two regions: *scrutator*, Sayi (armatum *Lap.*) and *peregrinator* (carbonatum *Lec.*) while another, *angulatum*, is admitted to our lists with doubt.

The fifth volume of COLEOPTERA comprises the Cerambycidæ and Bruchidæ (the intermediate volumes being in preparation), and consists of 537 pages and 26 plates, illustrating over 500 species or varieties. The part relating to Cerambycidæ is the result of the studies of Mr. H. W. Bates, that concerning the Bruchidæ of Dr. David Sharp.

Perilasius *Bates*, p. 16. This genus is related to *Brothylus* and *Osmidus*. It differs from the former in having the anterior coxæ less angulated externally; the antennæ are similarly sulcate. *Osmidus* has the anterior coxæ as in *Perilasius*, but the antennæ are not sulcate. *P. championi* has a great superficial resemblance to *O. guttatus* Lec.

Page 84. Mr. Bates proposes to unite under the generic name *Sphenothecus* those species which, in our fauna, are divided among several genera, viz.: *Sphenothecus*, *Ischnocnemis*, *Entomosterna* and possibly *Perarthrus*. As we have but one species in each it would be presuming to controvert the opinion of Mr. Bates, but the separation of genera in the Cerambycidæ seems to depend entirely on the standpoint from which separation starts. Important structural characters have, in this family, at times merely specific or sexual value, as between *Gaurotes cyanipennis* and *abdominalis* in the mesosternum as well as in the vestiture of the hind tarsi in the two sexes of *Acmæops militaris*. The form of the mandibles, the initial point of LeConte's subdivision, seems to me more important and less subject to variation than the form of the mesosternum.

Lepturges infilatus *Bates*, very closely resembles our *angulatus*, but is less distinctly punctured.

L. symmetrimacula *Bates*, is extremely close to our *symmetricus*. I have seen but one of the form.

On page 216 Mr. Bates recurs to the question of Amphionycha and its type, and I think supplies what was lacking in my previous notes in proof of the fact that LeConte was the first who described the genus and gave a definite type. Mr. Bates' argument is correct if we admit the propriety of shifting one of Chevrolat's names from one type to another, and then admitting that Leseleuc established the genus, although "he did not give a generic formula."

On page 314 the name Agalissus gratus *Hald.*, has been placed as a synonym of clytoides, while the case should be reversed.

Myrmolamia *Bates*, p. 363. This is identical with Cyrtinus, as I am informed by Mr. Bates. It is interesting to find the genus extending so far as Panama.

On page 392 it is suggested that our species of Liopus,— *Wiltii*, *crassulus* and *fascicularis* should be referred to Eleothinus. The characters seem extremely feeble for generic separation.

With page 437 of the fifth volume the portion relating to the Bruchidæ begins, Dr. David Sharp the author. In the Mexican fauna there are but three genera, as in our own, but the species far exceed those described in our fauna. Dr. Sharp remarks that in our "Classification" the Bruchidæ are placed between the Chrysomelidæ and Tenebrionidæ. While this is true it is merely from the mechanical necessities of book-making. The Tenebrionidæ and Chrysomelidæ belong to two distinct divisions of normal COLEOPTERA, and while the Bruchidæ are placed between the two families, it is intended to indicate their relationship with Chrysomelidæ, but not even the most vague with the Heteromera, as will be seen by reference to p. xxxvi of the Classification.

Bruchus longiventris *Shp.*, p. 476, is protractus *Horn*.

Spermophagus p. 492. Under this genus Dr. Sharp has suppressed Zabrotes *Horn*, and probably justly, but whatever the typical form of Spermophagus may be the species *robiniæ* and those separated by me as Zabrotes should not belong to the same genus.

Notes from the Museum at Cambridge.

BY GEORGE H. HORN, M. D.

The Museum became the recipient of the cabinets of Ziegler and Melsheimer by purchase, and the types have been examined with extremely few exceptions by Mr. Henshaw and myself, and our results will soon be published by him in the manner already adopted for other of the older authors. The search for the actual types required a considerable expenditure of time and labor, as many were scattered in the general collections of the Museum, while others were in the cabinet of Dr. LeConte.

Fortunately, a short time before my arrival, the Museum had received a number of duplicates representing a portion of the species studied by H. W. Bates in the volumes on Carabidæ and Cerambycidæ of the Biologia Centrali-Americana. These fortunately remained intact until I had an opportunity to examine them. I have made the following notes:

Lachnophorus sculptifrons *Bates*. I am unable to see that this differs from L. elegantulus *Mann*.

Anchonoderus myops *Reiche*. My *A. quadrinotatus* resembles this species, but has a much larger humeral red spot. Unfortunately I had not sufficient material for comparison, but I suspect that the species have been unduly increased.

Anchomenus decempunctatus *Reiche*. I am not able to see that this differs from our *Platynus bembidioides* Kby., which in our fauna extends from the Hudson's Bay region to Arizona.

Philophuga viridicollis. This species has been incorrectly determined, and should be amoena *Lec*. Chaudoir has already made the same mistake, calling the latter species *Horni*. I have already corrected this error, Trans. Am. Ent. Soc. 1882, p. 144.

Galerita mexicana *Chd*. It is highly probable that the species described by me as *G. decipiens* (Trans. Am. Ent. Soc. xii, p. 131) is identical with this, my determination being from memory alone, but why Mr. Bates makes *atripes* Lec., a synonym I cannot understand, as it is certainly not warranted either by the facts of the case or the date of publication.

Anisotarsus mexicanus *Dej*., has been described as *Anisodactylus arizonæ* Casey. I can see no reason why the generic name used by Casey should not stand.

Anisotarsus brevicollis *Chaud*., also occurs in Arizona. It is a very black species, the female more opaque than the male.

Bradycellus obsoletus *Say*. This species does not differ from the very variable *Tachycellus nitidus* Dej.

Chlænius cæruleicollis *Chd*., has been redescribed by me as *C. inæqualis*.

Chlænius chrysopleurus *Chaud*., has been incorrectly determined by me as *C. validus* (Trans. Am. Ent. Soc. 1876, p. 257).

Bembidium scintillans *Bates*, has been redescribed by Mr. Casey as *B. vinnulum*.

Stenosphenus hirsutipennis *Bates*, is identical with S. lugens *Lec*.

Nyssodrys contempta *Bates*, is Haldemani *Lec*.

At the time of my review of the Acanthocinini there was but the typical specimen known, a ♂. Since, others have been abundantly obtained by Mr. G. Noble, of Savannah, and the presence of an ovipositor in the ♀ shows that it must be referred to the group Acanthocini and placed after Acanthocinus, from which it may be separated in the table by the antennæ not fimbriate and the lateral tubercle of the thorax close to the base. The species must be known as *Nyssodrys Haldemani.*

Malacopterus lineatus *Guer.*, with the species *M. vittatus* Lec., is identical.

Tetraopes rubrocinereus *Thoms.*, is identical with T. discoideus *Lec.*

The following synonymy was given me by Mr. F. Blanchard from Mr. A. Fauvel:

Stenus *atomarius* Casey, is pumilio *Er.*
mammops Casey, is humilis *Er.*
subgriseus Casey, is morio *Grav.*
reconditus Casey, is tarsalis *Ljungh.*

The following additional notes have been made from an examination of specimens in the cabinet of Dr. LeConte:

Bembidium *stabile* Lec. This species is exactly identical with lugubre *Lec.*

B. *nitens* Lec. (*picipes* ‡ Mann.) does not differ from Grapii *Gyll.*

B. *pictum* Lec. This name being preoccupied, flavopictum *Mots.* must be used.

Pterostichus (Poecilus) cyaneus *Lec.* This name is also preoccupied, and Chaudoir has proposed cyanicolor, Abeille, 1875, p. 84.

Gyrinus gibber *Lec.* This specimen is simply a deformity of analis. By an accident this species is erroneously placed in the synopsis by Dr. LeConte, and should have come after analis, as will be seen by the letter *b*, the mesosternum being not at all trilobed in front as in pectoralis (*vide* Proc. Acad. 1868, p. 370).

Elmis *vulneratus* Lec., is merely a color variety of glaber *Horn.*

Pristoscelis cruralis *Lec.*, should be referred to Listrus.

Platycerus Agassii *Lec.* The type specimen is a female, and the species described as *P. californicus* Casey, is perfectly identical.

Leptura spuria *Lec.* This is positively the ♂ of Acmaeops militaris *Lec.* In this species the first joint of the ♂ hind tarsus is not densely pubescent beneath.

Leptura quadrata *Lec.* This species is a color variety of *convexa*, itself a race of *instabilis*. *L. quadrata* has pale antennæ and legs,

but this is by no means rare in normally marked specimens of *convexa;* the elytra are entirely black, except two marginal yellow spots on each elytron, one a little before, the other behind the middle; these are the ends of the yellow bands seen in *convexa.*

Leptura brevicornis *Lec.* This species was described from a female. At the present time both sexes are before me. In the female the antennæ are short, gradually thicker to tip, extend but little beyond the humeri and are 11-jointed, while in the male the antennæ are as long as the body, slender and subserrate (as in *canadensis*) and with the eleventh joint almost divided. The male insect is also much smaller than the female, the elytra more densely but less coarsely punctured.

Leptura sexmaculata *Linn.* The species mentioned by Dr. LeConte in his table (New Species, 1872) agrees well with the figure given by Olivier, but *vexatrix* Mann., is erroneously placed as a synonym. The latter species more closely resembles *convexa* in its markings, but is a much more slender species, with the apices of the elytra obliquely truncate. L. vexatrix *Mann.*, should be restored to a place in our lists following *sexmaculata.*

Haltica inaerata *Lec.*, is simply a color variety of ignita *Ill.*

The following synonymy has been otherwise observed:

Metachroma cuprea *Provancher*, Nat. Canad. x, p. 383, is Scelodonta nebulosa *Lec.* Through the kindness of l'Abbe Provancher I have been enabled to examine the type.

Brumus septentrionis *Weise*, Stett. Zeit. 1885, p. 203, is Exochomus marginipennis *Lec.*, and the variety in which the elytra are in great part red, the suture black and abruptly dilated at apex, on each elytron two black spots.

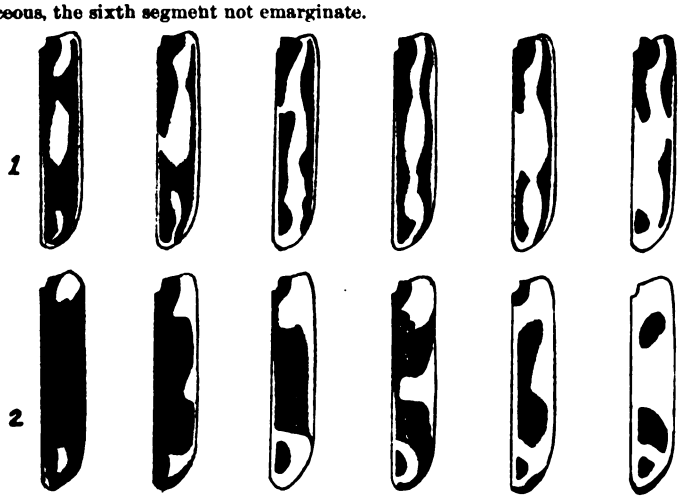
In the Revue d'Entomologie, 1885, p. 134, Mr. Fauvel indicates the possible identity of *Dircæa fusca* Lec. with *Phlœotrya Vaudoueri* Muls. I have recently received, through the kindness of Mr. Fauvel, a specimen of the latter, and am happy in confirming his supposition by direct comparison. The question of the generic name remains to be settled. From the remarks of Mr. Fauvel it seems that *Dircæa* Fab., is purely a synonym of *Serropalpus* and *Phlœotrya* was proposed by Stephens for the species considered by his cotemporaries as Dircæa. As Mr. Fauvel is doubtless correct, the name Dircæa in our lists should be replaced by Phlœotrya and the specific name fusca *Lec.* by Vaudoueri *Muls.*

During the progress of the "Genera" Dr. LeConte, with a commendable liberality, sent to Lacordaire for study a number of types of genera, and in particular many from California, among which were several uniques, namely, *Acrepis maculata*, *Craniotus pubescens*, *Cryptadius inflatus* and *Auchmobius sublævis*. By an unfortunate calamity the vessel conveying them never reached Europe, and the specimens were lost; the types of Schönherr's Curculionidæ were near meeting a similar fate some years later. Two of the lost species were recovered during my travels in the West, the third is due to Crotch, while it is now, after more than thirty years, a pleasure to add the fourth.

Psoa (*Acrepis*) **maculata** *Lec.* Ann. Lyc. v, p. 213. Form elongate, slightly depressed cylindrical, sparsely pubescent, æneo-piceous varying to blue. Head coarsely, moderately densely punctured; thorax subquadrate, narrowed at base, basal margin slightly reflexed, apical margin slightly impressed on each side of the insertion of the head, median line slightly impressed posteriorly, disc coarsely punctate, very densely at the sides; elytra slightly wider than the thorax, coarsely and deeply, but not densely punctured, surface variably ornamented with yellowish white spaces forming often a narrow lateral and more irregular median vitta. Body beneath æneous or bluish, the abdomen variable in color sexually. Length .30–.40 inch; 7.5–10 mm.

Male.—Thorax a little longer than wide: the three joints of the antennal club together much shorter than all the preceding joints. Abdomen above and beneath æneous, rarely paler at tip, the sixth segment distinctly emarginate.

Female.—Thorax broader than long; the joints of the club nearly as long as the preceding joints. Abdomen reddish yellow, the small terminal segment piceous, the sixth segment not emarginate.



1.—Variations of elytral markings of *P. maculata* Lec.
2.— idem. *P. quadrisignata* Horn.

The markings of the elytra are so variable in the specimens I have seen that I have prepared a series of sketches representing in the upper row *maculata*, and in the lower *quadrisignata*. The first figure in each line is the typical form of the two species, and from the series it will be observed that in *maculata* the tendency is to become vittate, while in the other the darker ground-color gradually lessens, leaving the elytra simply red, spotted with blue.

In *quadrisignata* the same sexual characters have been observed as in *maculata*. In the former species the thorax is more nearly ovate, the sides arcuately narrowing to base, while in *maculata* they are parallel at middle, the disc more convex and shining, and less densely punctured in the former species. The form of the two species is also different, *quadrisignata* being more slender and cylindrical, resembling Polycaon, while *maculata* more nearly approaches some Clerides.

It seems remarkable that Dr. LeConte should have obtained an unique of what seems the rarest species, and that more than thirty years have passed without its recovery. In view of the great variability of the elytral markings of *quadrisignata* we were disposed to suppress the name proposed by me as a possible variety, but I am now confident that we have to deal with two distinct species.

I have been told that *quadrisignata* infests grape vines.

JUNE 14, 1886.

Director Dr. HORN in the chair.

The following additions to the Library of the American Entomological Society were announced:

Canadian Entomologist, vol. xviii, No. 4. From the Editor.

Entomologica Americana, vol. ii, No. 3. From the Editor.

Entomologist's Monthly Magazine, June, 1866. From the Conductors.

Journal Bombay Natural History Society, vol. i, No. 2. From the Society.

Comptes-Rendus des Sciences Sér. iii, No. 71–73. From the Editor.

Annual Report of the Smithsonian Institution for 1885. From the Institution.

Recherche de l'espece Typique. From the author, through Dr. Horn.

Bulletin of the Brookville Society of Natural History, No. 2. From the Society.

Proceedings of the Zoological Society of London, 1885; part iv, 1886. From the Society.

Eighteenth Annual Report of the Peabody Academy of Sciences. From the Academy.

Matériaux pour la faune Entomologique de la Province d'Anvers. Coléoptères par A Predhomme de Borre. From the Author.

Papilio, vols. 1–3. From Dr. G. H. Horn.

Entomologische Zeitung, herausgegeben von dem Entomologischen Vereine zu Stettin. 1876, Nos. 1–3, 1879, Nos. 1–3. From Dr. G. H. Horn.

Papers 195 and 196 were read by title and referred to Publication Committee.

Mr. Blake announced that the name Agama, used by him for a genus of Mutillidæ, was preoccupied and Photopsis was suggested to replace it.

Dr. Horn announced the completion of another volume of the Coleoptera portion of the Biologia Centrali-Americana and indicated the importance of the work to students of our fauna.

Dr. Horn referred to *Dinapate Wrighti*, and read portions of a letter from W. G. Wright, its discoverer, in which reference was made to the larvæ still alive in the trunk of the tree.

The application of George B. Cresson for associate membership was read the second time, and on ballot he was duly elected.

On motion of Mr. Knight the Section adjourned until the regular time of meeting in September.

SEPTEMBER 23, 1886.

Director Dr. HORN in the chair.

The following additions to the Library of the American Entomological Society were announced:

Transactions of the American Entomological Society, vol. xiii, Nos. 1–2. From the Publication Committee.

Transactions of the Wisconsin Academy of Sciences, Arts and Letters, vol. vi, 1881–83. From the Academy.

Bulletin of the Buffalo Society of Natural Sciences, vol. v, No. 2. From the Society.

Bulletin of the Museum of Comparative Zoology, vol. xii, No. 5. From the Museum.

Transactions of the Natural History Society of Odessa, vol. x. From the Society.

Proceedings of the Academy of Natural Sciences of Philadelphia, 1886, part 1. From the Academy.

Proceedings of the Boston Society of Natural History, vol. xxiii, sig. 16–17. From the Society.

Entomologica Americana, vol. ii, No. 6. From the Editor.

Naturaliste Canadien, vol. xv. No. 12, xvi, No. 2. From the Editor.

Entomologist's Monthly Magazine, Nos. 266–268. From the Conductors.

Canadian Entomologist, vol. xviii, No. 5. From the Editor.

Journal of the Bombay Natural History Society, vol. i, No. 3. From the Society.

Journal of the Linnean Society of London, vol. xix. From the Society.

Report of the Entomologist, Charles V. Riley for 1885. From the Author.

Proceedings of the Zoological Society of London, 1886, part 1. From the Society.

Sixteenth Annual Report of the Entomological Society of Ontario. From the Society.

Verhandlungen des naturhistorischen Vereines der preussischen Rheinlande und Westfalens, vol. xxiv. From the Society.

Naturgeschichte der Insecten Deutchlands, vol. vi, part 4. From the Editors.

Berliner Entomologische Zeitschrift, vol. xxx, part 1. From the Society.

Annales de la Société Entomologique de France, 1885. From the Society.

Comptes-Rendus des Sciences, Sér iii, Nos. 74–75. From the Editor.

Bulletino della Societa Entomologica Italiana, 1886, Trim. 1–3. From the Society.

Species des Hyménoptères d'Europe et l'Algerie, par Ed-André, vols. ii–iii. From the Author.

Artropodos del Viaje al Pacifico, per Ignacio Bolivar. From Dr. G. H. Horn.

The Mulberry Silk-worm, being a Manual of Instructions in Silk Culture, by C. V. Riley. From the Author.

A generic Synopsis of the hymenopterous Family Proctotrupidæ, by L. O. Howard. From the Author.

Biologia Centrali-Americana. Hymenoptera, pp. 289–312; Diptera, pp. 1–48; Lepidoptera-Heterocera, vol. i, pp. 169–192, pl. 16–17; Coleoptera, vol. i, part 2, pp. 537–608, pl. 14; vol. ii, part 2, pp. 1–24; pl. 1; vol. iii, part 2, pp. 337–372, pl. 13, title and index; vol. iv, part 1, pp. 153–216, pl. 7–9; vol. vi, part 1, pp. 441–472, pl. 25, 26, part 2, pp. 113–124. By purchase.

The report of the Custodian was read and accepted.

The Publication Committee reported in favor of publishing papers 195 and 196, entitled:

Descriptions of new Pyralidæ, by Geo. D. Hulst.

A generic Synopsis of the hymenopterous Family Proctotrupidæ, by L. O. Howard.

Dr. Horn exhibited to the members two photographs of the tomb of Thomas Say at New Harmony, Ind.; also an india ink sketch of the house built on the spot formerly his residence.

Specimens of *Dinapate Wrightii* were shown by Dr. Horn which had emerged during the early part of the month from the fragment of the tree trunk sent several months ago by W. G. Wright.

Specimens of *Geotrupes chalybæus* were also shown. This species had been described from fragments in the cabinet of Dr. LeConte.

The species although large had never before been represented in cabinets by entire specimens. Now that its habits are better known it will probably become common.

The Custodian requested permission, and was allowed to use such duplicates not desirable for the cabinet, for public exhibition in the Museum of the Academy.

October 25, 1886.

Director Dr. Horn in the chair.

The following additions to the Library of the American Entomological Society were announced:

Proceedings of the Boston Society of Natural History, vol. xxiii, sig. 18–19, pp. 273–304. From the Society.

Memoirs of the Boston Society of Natural History, vol. iii, Nos. 12–13. From the Society.

Bulletin of the Essex Institute, vol. xvii, Nos. 7–12. From the Institute.

Proceedings of the Zoological Society of London, 1886, part 2. From the Society.

Transactions and Proceedings of the Royal Society of South Australia, vol. viii. From the Society.

Canadian Entomologist, vol. xviii, No. 7. From the Editor.

Entomologist's Monthly Magazine, No. 269. From Conductors.

Journal and Proceedings of the Hamilton Association, vol. i, No. 2. From the Association.

Fourth Report of the U. S. Entomological Commission, 1883–85. From the Commission.

Reports 7, 10, 12 and 14 of the State Entomologist of Illinois. From the State Board of Agriculture.

Horæ Societatis Entomologicæ Rossicæ, vol. xix, 1885. From the Society.

Annali Museo Civico di Storia Naturale di Genoa, vols. xviii–xx, 2d ser. vols. i–ii. From the Museum.

Mittheilungen der Schweizerischen Entomologischen Gesellschaft, vol. vii, Nos. 5–6. From the Society.

Verhandlungen der kaiserlich-koniglichen Zoologisch-botanischen Gesellschaft in Wien, vol. xxxvi, Nos. 1–2. From the Society.

Comptes-Rendus, des Sciences, sér. iii, No. 76. From the Editor.

Le Naturaliste Canadien, vol. xvi, No. 3. From the Editor.

Life of North American Insects, by Prof. B. Jaeger, 1854. From C. C. Cresson.

Nomenclator Zoologicus, by S. H. Scudder. From the Department of the Interior.

The monthly report of the Custodian of the Section was read, in which it was stated that the greater part of his time had been devoted to the Wilt collection.

Papers 197 and 198 were read by title and referred to Publication Committee.

The Director announced to the Section that the Coleoptera of the collection of our late member, Charles Wilt, had been presented to the American Entomological Society by Mr. Harry C. Wilt, his son.

The Publication Committee reported that they considered it advisable to publish the "Synopsis of the Families and Genera of Hymenoptera of North America" by E. T. Cresson as an intercalary volume. On motion of Mr. Knight the suggestion was approved.

The application of Mr. J. H. B. Bland for associate membership was read a second time, and on ballot he was duly elected.

Dr. Horn suggested the utility of lectures by members of the Section as a means of stimulating further study on the part of younger members and others, and offered to begin on any subject connected with Coleoptera that those present would suggest.

NOVEMBER 25, 1886.

Dr. SKINNER in the chair.

The following additions to the Library of the American Entomological Society were announced:

Proceedings of the Academy of Natural Sciences of Philadelphia, 1886, part 2. From the Academy.

Proceeding of the Zoological Society of London, 1886, part 3. From the Society.

Bulletin of the Essex Institute, vol. xviii, Nos. 1–6. From the Institute.

Canadian Entomologist, vol. xviii, No. 8. From the Editor.

Entomologist's Monthly Magazine, No. 270. From Conductors.

Entomologia Americana, vol. ii, No. 8. From the Editor.

Miscellaneous Essays on Economic Entomology, by S. A. Forbes, State Entomologist of Illinois. From the Author.

Le Naturaliste Canadien, vol. xvi, No. 4. From the Editor.

Comptes-Rendus des Sciences, Sér. iii, No. 77. From the Editor.

The Cockroach of the Past, by S. H. Scudder. From the Author.

Une experience sur la Fonction des Antennes chez la Blatte, par Felix Plateau. From the Author.

Notice Bibliographique de F. A. J. Plateau. From the Author.

Palpes des Myriopodes et des Araneides, par F. Plateau. From the Author.

Extrait des Archives de Biologie, par E Van Beneden et C. Van Bambeke, vol. vii, 1886. From the Authors.

The Publication Committee reported in favor of publishing in the Transactions Am. Ent. Soc. the following:

Paper 197, Dipterological notes and descriptions, by S. W. Williston, M. D.

Paper 198, Catalogue of Syrphidæ of South America, by S. W. Williston, M. D.

Paper 199 was read by title and referred to Publication Committee.

The application of H. M. Wenzel, Dr. D. M. Castle and Charles Liebeck for associate membership were read a second time, and on ballot all were duly elected.

Messrs. Blake, Laurent and Ridings were appointed to prepare a ticket for the election in December.

Mr. Ridings announced that in accordance with the custom of the Section the December meeting would occur on the second Monday, following the meeting of the Am. Ent. Soc.

December 13, 1886.

Director Dr. Horn in the chair.

The following additions to the Library of the American Entomological Society were announced:

Transactions of the Academy of Sciences of St. Louis, vol. iv. From the Academy.

Canadian Entomologist, vol. xviii, No. 9. From the Editor.

Entomologist's Monthly Magazine, No. 271. From Conductors.

Annual Report of the Curator of the Museum of Comparative Zoology from 1885–86. From the Museum.

Comptes-Rendus des Sciences, Sér. iii, No. 78. From the Editor.

Outlines of Entomology published in connection with the Author's Annual Report upon Injurious Insects, part 1, by William Le Baron, M.D. From Prof. S. A. Forbes.

The following were presented by the author:—

First and Second Annual Reports on the Injurious and other Insects of the State of New York, by J. A. Lintner.

Report of some Injurious Insects for the year 1886, by J. A. Lintner.

On some Injurious Insects of Massachusetts, by J. A. Lintner.

Report on the Insects and other Animal Forms of Caledonia Creek, New York, by J. A. Lintner.

Insects of the Clover Plant, by J. A. Lintner.

On some species of Nisoniades, by J. A. Lintner.

A new principle in protection from Insect attack, by J. A. Lintner.

Cut Worms, by J. A. Lintner.

Entomological Contributions, No. 4, by J. A. Lintner.

Lepidoptera of the Adirondack Region of New York, by J. A. Lintner.

The annual report of the Treasurer was read, and on motion referred to a special committee consisting of Messrs. Knight, Horn and Lewis for audit.

The Publication Committee reported in favor of publishing paper 199, entitled "Contributions to a knowledge of the Lepidoptera of West Africa" by Rev. W. J. Holland.

Paper 200 was read by title and referred to same Committee.

Dr. Horn announced the death of Baron E. von Harold in August, and referred to the excellent work which he had done, especially among the Scarabæidæ. The "Catalogus Coleoptorum," prepared in conjunction with Dr. Gemmiger, was a monument to his industry, and the most important general work published since the "Genera" by Lacordaire.

On motion of Mr. Ridings an appropriation of ten dollars was made to Mr. Coburn, the Janitor of the Academy, for his services.

The consideration of the suggestion made by the Custodian to open the rooms at night, was deferred to a future meeting.

An election for officers for 1887 was then held, and upon count of the ballots the following were declared chosen:

Director,—Dr. G. H. Horn.

Vice-Director,—H. C. McCook, D. D.

Recorder,—James H. Ridings.

Treasurer,—E. T. Cresson.

Publication Committee,—Dr. H. Skinner, Philip Laurent.

ERRATA.

Page 69, line 19 from top, for differences, read difference.

In the "Review of the species described by Olivier" a number of typographical errors has been allowed to pass uncorrected by the printer, although noted on the proof. As the paper is merely a catalogue, those having occasion to use it will readily observe the errors without especially noting them here.—G. H. Horn.

Page 146. for Aglossa gripalis, read griphalis.

" 149, for Botis psychialis, read psychicalis.

" 159, line 5 from bottom, omit period after "follow" and insert comma.

" 164, for Ephestia albocostalialis, read albocostalis.

The head lines on pp. 309–323 for North American Diptera, read South American.

INDEX.

The names of new genera and of new species are followed by the name of the Author.

	PAGE
Acerota	173
Aclista	176, 178
Acolus	172
Acraspis	62
Acrepis	xv
Acrocera liturata *Williston*	294
Acrochordonodes	324
Acropiesta	176, 178
Adelothyreus	10, 29, 56
Dejeani	29
Ægilips	64
Agama	179
Agathodes	156
Agloesa electalis *Hulst*	146
gripalis *Hulst*	146
Alaptus	174
Allograpta	313
Allotria	64
Allotriinæ	60, 63
Allotropa	173
Altica, Olivierian species	141
Amathia	324
Amblyaspis	173
Amphibolips	62
Anacharis	64
Anagrus	175
Anaphes	175
Andricus	61
Anectata	176, 177
Anelastes	11, 49, 58
Druryi	49
Anerastia cestalis *Hulst*	164
dotalis *Hulst*	164
excantalis *Hulst*	163
Aneurhynchus	175
Anommatium	177
Anopedias	173
Anteon	170
Anteris	172
Antistrophus	61
Apegus	172
Aphelininæ	132
Aphelopus	170
Aphritis	324
Apterogyna	180, 277
Ascia	323, 324
Asilidæ	287
Asopia anniculalis *Hulst*	147
culiculalis *Hulst*	147
occidentalis *Hulst*	147
Ateleopterus	171
Atemnocera	324
Atomosia Mikii *Will*	290
Atractia	290
Atritomus	171
Attelabus, Olivierian species	139
Baccha	314, 323
Baeoneura	172
Bæus	172
Baryconus	172
Basalys	175
Belonocnema	61
Belvoisia bicincta	302
bifasciata	302
v. d. Wulpi *Will*	303
Belyta	176, 177
Belytinæ	170, 176
Bethylinæ	171
Bethylus	171
Biologia Centrali-Americana, Notes.	vii
Biorhiza	62
Blastothrix rosæ *Ashm.*	130
Blepharipeza leucophrys	304
Bostrichus	139
Bothriothorax Peckhamii *Ashm.*	132
Botis bellulalis *Hulst*	149
bububattalis *Hulst*	149
confovealis *Hulst*	151
festalis *Hulst*	153
fumoferalis *Hulst*	154
gracilalis *Hulst*	151
gulosalis *Hulst*	155

PAGE

Botis gyralis *Hulst* 152
hædulalis *Hulst* 152
hariolalis *Hulst* 149
immaculalis *Hulst* 154
invinctalis *Hulst* 152
labeculalis *Hulst* 152
levalis *Hulst* 152
lulualis *Hulst* 150
monulalis *Hulst* 154
nexalis *Hulst* 150
oblectalis *Hulst* 154
obnigralis *Hulst* 153
octosignalis *Hulst* 153
offumalis *Hulst* 150
pergilvalis *Hulst* 151
pilalis *Hulst* 151
psychialis *Hulst* 149
rogatalis *Hulst* 149
roseopennalis *Hulst* 148
salutalis *Hulst* 150
scurralis *Hulst* 155
succandidalis *Hulst* 153
thallophilalis *Hulst* 154
uxorculalis *Hulst* 153
venalalis *Hulst* 151
Bradynobænus 180, 277
Brentus 140
Bruchus, Olivierian species 139
Buprestis, Olivierian species 137
Calandra, Olivierian species 139
Callidium, Olivierian species 138
Callimome lissus 127
theon 127
Callirhytis 61
Cambridge Museum, Notes from ... xi
Clamplotera 174
Cantharis, Olivierian species 138
Carabus, Olivierian species 137
Caraphractus 174
Cassida, Olivierian species 143
Catabomba 311
Catillus 173
Cephalia rufipes 307
Cephalonomia 175
Cerambyx, Olivierian species 138
Ceraphron 171
Ceraphroninæ 170, 171
Ceraturgus nigripes *Will* 287
Ceratophayi 324

PAGE

Ceria 322
Cerophytinæ 50
Cerophytum 50, 58
convexicolle 51
pulsator 51
Ceroptres 63
Cetonia, Olivierian species 136
Chalcididæ 125
Chalcidinæ 125
Chalcœla gemmalis *Hulst.* 148
Charaxes ogovensis *Holland* 330
Talagugæ *Holland* 332
Cheilosia 324
Chelogynus 170
Chiloneurus cupreicollis *Ashm* 131
Chlamys, Olivierian species 142
Chrysobothris 65, 119
acuteipennis 104, 107
æneola 109, 113
ærea 103, 104
alabamæ 78
analis 109, 111
atabalipa 71, 72
atrifasciata 116
axillaris *Horn* 72, 75
azurea 109, 112
Blanchardi *Horn* 85, 93
californica 85, 93
californica 118
carinipennis 85, 91
caurina *Horn* 85, 92
chalcophoroides *Horn* 109, 110
chrysœla 109, 114
contigua 79, 80
cuprascens 79, 81
cyanella *Horn* 99, 102
debilis 72, 75
deleta 99
dentipes 85, 87
deserta *Horn* 99, 100
dolata *Horn* 85, 87
Edwardsii *Horn* 71, 74
errans 118
exesa 85, 95
fastidiosa 118
femorata 77
floricola 80, 81
frontalis 118
gemmata 104, 105

	PAGE
Chrysobothris *Germari*	118
Harrisii	85, 86
humilis *Horn*	99, 102
ignicollis	80, 82
impressa	109
Lesueuri	79
libonoti *Horn*	104, 108
lixa *Horn*	99, 101
ludificata *Horn*	85, 88
mali *Horn*	86, 87
Merkelii *Horn*	104, 106
misella	79
nigritula	79
nixa *Horn*	86, 98
octocola	71, 73
prasina *Horn*	116, 118
purpureovittata *Horn*	72, 76
pusilla	86, 97
quadrilineata	85, 94
scabripennis	85, 89
scitula	109, 115
sexsignata	109, 112
soror	79
speculifer *Horn*	80, 83
texana	85, 96
thoracica	118
trinervia	85, 90
Ulkei	116, 117
viridicyanea *Horn*	80, 84
Chrysogaster	310
Chrysomela, Olivierian species	140
Chyphotes *Blake*	180, 276, 285
elevatus *Blake*	276
Cicindela, Olivierian species	137
Cinetus	177
Cirrospilus purpureus *Ashm*	133
Cistela, Olivierian species	138
Cistogaster divisa	296
Clerus, Olivierian species	139
Clytra, Olivierian species	142
Coccinella, Olivierian species	143
Coccophagus purpureus *Ashm*	132
Colaspis, Olivierian species	142
Colaspis, Say's species of	144
Copelus	178
Copestylum	317
Copidosoma melanocephalum *Ash.*	131
Cosmocoma	174
Crambidæ	165

	PAGE
Crambus biothanatalis *Hulst*	166
bonusculalis *Hulst*	167
comptulatalis *Hulst*	167
cuneolalis *Hulst*	166
cypridalis *Hulst*	165
delectalis *Hulst*	165
extorralis *Hulst*	165
gausapalis *Hulst*	167
offectalis *Hulst*	166
refotalis *Hulst*	166
trichusalis *Hulst*	165
Crenis Amulia	328
Crioceris, Olivierian species	142
Criorhina	322
Cryptocephalus, Olivierian species	142
Cryptogastri	59, 60, 63
Cryptostoma	11, 48, 58
Dohrni	49
Cucujus, Olivierian species	139
Curculio, Olivierian species	140
Cynipidæ	59
Cynipinæ	60
Cynips	62
Cyphocera ruficauda	305
Cyrtidæ	294
Decatoma maculipes *Ashm*	126
Dejeania corpulenta	297
hystricosa *Will.*	297
rutilivides	297
Deltometopus	10, 15, 55
amœnicornis	15
rufipes	16
Dendrocharis	10, 11, 55
flavicornis	12
Desmia confusalis *Hulst*	158
Diaperis, Olivierian species	138
Diapria	175, 176
Diaprinæ	170, 175
Diastrophus	61
Dinapate *Horn*	1
Wrightii *Horn*	2
Dioctria pusio	288
Diphora	177
Dipterological Notes and Descriptions	287
Dolichogyna	320
Dolichopidæ	295
Doliosyrphus	320
Donacia, Olivierian species	139

PAGE

Doriclytus 174
Doros 314
Dromæolus 10, 17, 55
basalis 17, 20
californicus 17, 18
cylindricollis 18, 22
Harringtoni *Horn* 18, 21
Marseuli 18, 22
nitens *Horn* 17, 19
pusillus *Horn* 18, 23
salsus 17, 19
sejunctus 17, 18
striatus 18, 21
Dryininæ 169, 170
Dryinus 170
Dryophanta 61
Dryorhizoxenus 61
Echinomyia filipalpus 301
hæmorrhoa 301
iterans 301
Ectadius 173
Ectypus limbatus *Will* 292
Elachristinæ 133
Elachistus flavipes *Ashm* 133
Elater, Olivierian species 137
Embolemina 169, 171
Embolemus 171
Emprepes magnalis *Hulst* 147
Encyrtinæ 130
Encyrtus siphonophoræ *Ashm* 131
Entomacis 175
Entomorphthalmus 11, 37, 57
rufiolus 37
Ephestia albocostalialis *Hulst* 164
Epipaschiæ 160
Epiphanis 11, 46, 58
cornutus 46
Epyris 171
Ergolis actisanes 327
Eriophora 324
Eristalis 317, 323
Eristalomyia 324
Eryotylus, Olivierian species 140
Eucneminæ 6
Eucnemini 6, 9
Eucnemis 10, 14, 55
americana *Horn* 14
Eucoila 64
Eudioptis oratalis *Hulst* 158

PAGE

Eulophinæ 133
Eumolopus, Olivierian species 143
Eupelminæ 128
Eupelmus auratus *Ashm* 128
cyaniceps *Ashm* 129
dryophantæ *Ashm* 130
dryorhizoxeni *Ashm* 129
gemmarii *Ashm* 129
quercus *Ashm* 130
sphæricephalus *Ashm* 129
zeli *Ashm* 130
Eurycreon aureolalis *Hulst* 156
Euryphene Goodii *Holland* 329
Eurytominæ 126
Eustochus 174
Fabricia 299, 300
Figitinæ 60, 64
Figites 64
Fornax 10, 24, 56
badius 24
bicolor 24, 27
calceatus 24, 25
Hornii 24, 25
infelix *Horn* 24, 27
molestus 24, 26
orchesides 24, 26
Galeruca, Olivierian species 140
Galesus 175
Glaurotricha 315
Glyphodes alitalis *Hulst* 157
Glyptonota 175
Gonatocerus 174
Gonatopus 170
Goniozus 171
Gryon 172
Gymnochæta alcedo 302
ruficornis *Will* 302
vivida *Will* 302
Gymnogastri 59, 60
Gyrinus, Olivierian species 138
Gyrolasia nigrocyaneus *Ashm* 134
Hadronotus 172
Helodes, Olivierian species 140
Helops, Olivierian species 138
Helophilus 321, 324
Helorinæ 170, 178
Helorus 178
Hemilexis 175, 176
Hemyda 297

PAGE

Hirmoneura flavipes *Will*..... 292
Hispa, Olivierian species..... 142
Holcaspis..... 62
Holopedina..... 171
Homalotylus lachni *Ashm*..... 132
Homeosoma impressalis *Hulst*..... 163
Horia, Olivierian species..... 138
Hyalomyia æneoventris *Will*..... 296
Hydrocampa australis *Hulst*..... 168
gyralis *Hulst*..... 159
Hydrocampidæ..... 159
Hylochares..... 11, 39, 57
nigricornis..... 39
Hypocampsis..... 174
Hypocœlus..... 11, 44, 57
frontosus..... 44
terminalis..... 45
Hypoderma lineata..... 307
Hystricia abrupta..... 298
ambigua..... 298
soror *Will*..... 298
Ibalia..... 60
Ibaliinæ..... 60
Idiotypa..... 175, 176
Idris..... 172
Imatisma..... 324
Inostemma..... 173
Inquilinæ..... 60, 63
Iphetrachelus..... 173
Ismarus..... 176, 177
Isobrachium..... 171
Isocybus..... 173
Isopteryx xeniolalis *Hulst*..... 159
Isorhombus..... 173
Isosoma gigantea *Ashm*..... 127
Isostasius..... 173
Jurinia algens..... 298
apicifera..... 300
decisa..... 301
hystricoides *Will*..... 300
hystrix..... 299
lateralis..... 300
smaragdina..... 300
Kleidotoma..... 64
Labeo..... 170
Labolips..... 175
Lachnoptera..... 325
Laodice..... 326
Lagynodes..... 171

PAGE

Lampyris, Olivierian species..... 137
Languria, Olivierian species..... 140
Laphria pubescens..... 290
Lasia Kletii..... 294
Lejops..... 324
Lepidoptera of West Africa..... 325
Leptacis..... 173
Leptomidas pantherinus..... 291
Leptorhaptus..... 177, 178
Leptura, Olivierian species..... 139
Leucospinæ..... 125
Leucospis affinis..... 125
Limacis..... 174
Litus..... 174
Lixus..... 140
Loxotropa..... 175, 176
Loxaulis..... 62
Lucanus, Olivierian species..... 136
Lycus, Olivierian species..... 137
Lygocerus..... 171
Macrocephalus, Olivierian species. 139
Macroglenes dryorhizoxeni *Ashm*.. 133
quercipisi..... 132
Macrohynnis..... 177, 178
Macrometopia..... 322
Mallota..... 320
Megaphycis edwardsialis *Hulst*..... 163
fernaldialis *Hulst*..... 163
Megaspilus..... 171
Megaspis..... 320
Megastes cœligenalis *Hulst*..... 156
Megastigmus flavipes *Ashm*..... 128
Melanophrys *Will*..... 305
flavipennis *Will*..... 306
Melanostoma..... 311
Melasini..... 6
Melasis..... 6, 55
pectinicornis..... 7
rufipennis *Horn*..... 7
Melolontha, Olivierian species..... 136
Merodon..... 324
Meromacrus..... 320
Mesogramma..... 324
Mesograpta..... 313
Metaclisis..... 173
Methoca..... 159, 272, 246
bicolor..... 279
californica..... 279
canadensis..... 279

PAGE

Methoca Poeyi 279
stygia 280
Microdon 309, 323
Microphthalma nigra 306
Microrhagus 11, 29, 56
audax *Horn* 31, 32
Bonvouloiri *Horn* 31, 35
humeralis 31, 36
imperfectus 31, 32
impressicollis 31, 34
oblitus 31, 33
pectinatus 31
subsinuatus 31, 33
triangularis 31, 34
Midas luteipennis 291
militaris 291
scitulus *Will* 291
Midasidæ 291
Milesia 324
Miota 178
Mixogaster 309
Monelata 176
Monocrita 173
Mordella, Olivierian species 138
Morinia 307
Muscidæ calyptratæ 296
Mutillidæ, Monograph of 179
Mutilla 180, 181, 194, 281
briaxus 195
cinaloa 182, 203
contracta 181, 198
copano 181, 205
cubensis 182, 202
dubitata 182, 201
euterpe 182, 201
eximia *Blake* 181, 200
exulans 280
floridana 182, 197
floridensis 181, 199
gracilis 181, 202
Grotei 181, 195
hexagona 181, 195
leona 182, 200
nana 181, 205
oajaca 181, 182, 196
ordinaria 181, 204
ornativentris 182, 196
palliceps 182, 200
parvula *Blake* 182, 206

PAGE

Mutilla peculiaris 182, 203
promethea 181, 198
puteola 182, 206
rufa 181, 201
rutilans 182, 204
sapiens 182, 204
Sayi 181, 198
scrupea 181, 202
senex 181, 199
terminata 181, 205
thoracica *Blake* 182, 204
tolteca 182, 197
trisignata 182, 198
vagans 280
versicolor 280
vigilans 195
yucatana 182, 203
Myelaphus lobicornis 288
rufus 288
Myiolepta 315
Mymar 174
Mymarinæ 170, 174
Myobia 305
Myrmosa 180, 277, 286
rufiventris 278
unicolor 278
Mystrophorus 170
Necrophorus, Olivierian species ... 137
Necydalis 139
Nematodes 11, 40, 57
atropos 41
pavidus *Horn* 41, 43
penetrans 41, 42
punctatus 41, 42
teres *Horn* 41, 43
Nemestrinidæ 292
Nephopteryx actualis *Hulst* 161
delassalis *Hulst* 161
lallatalis *Hulst* 161
perfuscalis *Hulst* 161
pergratialis *Hulst* 162
uncanalis *Hulst* 162
Neuroterus 62
Nitidula, Olivierian species 137
Nymphalinæ 325
Ochthera exculpta 307
mantis 307
Ocnæa helus 294
Ocyptamus 313

PAGE

Œdemagena tarandi ... 307
Onychia ... 64
Ooctonus ... 174
Ormyrus andricus *Ashm.* ... 128
quercus *Ashm* ... 128
Orobena castanealis *Hulst* ... 157
reluctalis *Hulst.* ... 156
seminivealis *Hulst* ... 157
subcitrinalis *Hulst* ... 157
Orthologhus ... 321
Orthoneura ... 324
Oxylabis ... 176, 177
Oxyomorpha livida *Ashm* ... 135
Pachyneuron syrphi *Ashm* ... 131
Pantoclis ... 176, 177
Pantolyta ... 176, 177
Parædis napæalis *Hulst* ... 145
Paramesius ... 175, 176
Paragus ... 310, 323
Pedinomma ... 171
Peleteria ... 301
Pempelia tarmitalis *Hulst* ... 162
Perium ... 324
Periclistus ... 63
Perilampinæ ... 126
Perilampis *alexis* ... 126
cyaneus ... 126
entellus ... 126
fulvicornis *Ashm* ... 126
hyalinus ... 126
lepreos ... 126
triangularis ... 126
Perisemus ... 171
Perothopinæ ... 52
Perothops ... 53, 58
mucida ... 53
Wittieki ... 54
Phaenocerus ... 10, 28, 56
americanus ... 28
Phalacromyia ... 315
Phlegon ... 11, 47, 58
heterocerus ... 47
Ulkei *Horn* ... 48
Photopsis *Blake* ... 180, 257, 285
abdominalis *Blake* ... 259, 275
albipes ... 258, 268
alcanor ... 258, 267
ampla ... 258, 266
astyanax ... 259, 272

PAGE

Photopsis atrata ... 258, 268
attenuata ... 258, 264
aulus ... 258, 270
Belfragei ... 258, 263
bicolor ... 258, 271
castanea ... 259, 273
clara ... 257, 262
concolor ... 258, 265
contracta ... 258, 265
danaus ... 257, 261
ferruginea ... 258, 264
glabrella ... 259, 274
hyalina ... 259, 274
imperialis ... 258, 265
inconspicuus *Blake* ... 259, 272
juxta ... 258, 270
lepidus *Blake* ... 258, 269
melaniceps *Blake* ... 258, 264
melicausa ... 258, 262
mellipes *Blake* ... 258, 262
mendica ... 257, 259
minuta ... 259, 272
nebulosus *Blake* ... 259, 275
nitida ... 258, 267
nokomis ... 257, 260
nuebecula ... 258, 266
orizaba ... 257, 260
pallida ... 259, 275
rustica ... 258, 271
sobrinus *Blake* ... 258, 268
tapajos ... 258, 269
triangularis ... 257, 263
unicolor ... 257, 261
uro ... 259, 273
venustus *Blake* ... 258, 270
Phrissopoda præceps ... 307
Phycidæ ... 161
Pia ... 310
Pinipestis fasciolalis *Hulst* ... 162
Pipiza ... 310, 323
Pipunculidæ ... 295
Pipunculus opacus *Will* ... 295
Pireninæ ... 132
Plagia ... 305
Plagiocera ... 324
Plagioneurus univittatus ... 295
Planes ... 324
Platygaster ... 174
Platygasterinæ ... 170, 173

PAGE

Platymischus 175
Polygnotus 174
Polypeza 176
Priomerus 324
Prionus, Olivierian species 138
Proctotrupidæ, Synopsis of. 169
Proctotrupinæ 170, 172
Prorasea lepidialis *Hulst* 146
Prosacantha 172
Psammotherma 180, 181, 193
ajax 181, 193
Psilomina 176, 177
Psoa maculata xv
quadrisignata xv
Pterodontia misella 295
Pteromalinæ 131
Pteroptila 320
Pyralidæ, Descriptions of new 145
Pyrochroa, Olivierian species 138
Rhina, Olivierian species 140
Rhingia 315
Rhipiphorus, Olivierian species 138
Rhodites 62
Rhoga 323
Rhynchænus, Olivierian species 140
Rhynchites, Olivierian species 139
Roselia 305
Sactogaster 173
Salpingogaster 315, 323
Saperda, Olivierian species 138
Sapholytus 63
Saropogon 289
Sarpedon 11, 39, 57
scabrosus 40
Saundersia bicolor *Will* 304
flavitarsis 303
maculata *Will* 304
signifera 303
Scarabæus, Olivierian species 136
Scarites, Olivierian species 138
Scelio 172
Scelioninæ 170, 172
Schizophilus 11, 45, 57
subrufus 46
Schœnobius opalescalis *Hulst* 167
Sclerochroa 171
Scolytus, Olivierian species 139
Scoparia ninguidalis *Hulst* 147
nominatalis *Hulst* 148

PAGE

Scoparia refugalis *Hulst* 148
Senogaster 321
Sierola 171
Silpha, Olivierian species 137
Siphona cristata 305
Smicra bioculata 125
flavopicta 125
pulchra 125
torvina 125
Sparasion 172
Sphærophthalma 180, 183, 206, 282
admetus 183, 229
ægina 188, 221
albopilosa 190, 241
altamira 189, 237
andreniformis 187, 223
antiguensis 184, 187, 224
apicalata 185, 230
arachnoides 188, 236
araneoides 191, 256
ariadne 188, 235
arota 187, 218
asopus 184, 225
aspasia 187, 220
auraria 187, 218
aureola 187, 215
auripes 192, 252
auripilis 185, 208
azteca 185, 232
balopilus 188, 237
balteola 190, 242
bellona 188, 221
bexar 183, 229
bioculata 184, 224
bisignata 191, 249
blandina 191, 257
brazoria 192, 254
californica 187, 219
canadensis 191, 248
canella 183, 230
caneo 190, 241
canina 188, 215
capitata 191, 246
castor 183, 227
chiapa 192, 251
chiron 184, 220
clio 187, 214
clotho 187, 212
coccineohirta 184, 187, 221

PAGE

Sphærophthalma comanche 184, 186, 211
combusta 191, 216
connectens 191, 249
contumax. 191, 250
creon 183, 228
Cressoni. 188, 234
creusa. 187, 223
cruciata. 192, 251
cypris, ... 190, 239
derilicta 189, 255
ducalis 191, 256
Edwardsii 185, 208
electra 189, 248
erato 186, 213
erudita 186, 217
fenestrata 183, 228
ferrugata 190, 239
ferruginea. 189, 249
flavida 185, 244
formosa 188, 236
frigida 190, 239
fulvohirta 184, 219
Gabbii 191, 247
gibbosa 184, 231
gila 186, 245
gordon 186, 210
gothica 191, 250
grandiceps 190, 244
hector 184, 225
hispida *Blake* 184, 226
holotricha 187, 214
iztapa 185, 233
izucar 191, 251
laticeps 186, 244
leda 191, 216
lerma 191, 248
luteola *Blake*. 188, 235
luxuriosa 188, 255
macerata *Blake* 183, 227, 286
macilenta 183, 231
macra 183, 230
macrocephala 190, 256
magna 187, 214
marpesia 187, 218
medea 187, 224
melancholica 190, 255
melanosoma 186, 233
militaris 190, 222
minutissima 192, 253

PAGE

Sphærophthalma mixtura 188, 234
mollissima *Blake* 184, 187, 215
montezumæ 189, 232
monticola 184, 226
montivaga 192, 254
munifica 189, 256
mutata 190, 241
nigriceps 189, 238
Nortoni 188, 234
obscura 183, 231
occidentalis 184, 187, 223
oceola 185, 243
ochracea. 184, 187, 228
orcus 183, 186, 209
pacifica 187, 217
parmosa *Blake* 186, 210
pennsylvanica 185, 208
petricola 192, 252
phædra 187, 219
præclara *Blake*. 192, 252
propinqua 185, 242
proserpina 188, 233
psammadroma 192, 253
pulchra 190, 222
pygmæa 192, 253
quadridens 191, 247
4-guttata 189, 239
Robinsonii 191, 246
rubriceps 189, 216
Sackenii 184, 186, 213
salutatrix 188, 251
Sanbornii 185, 243
scæva 183, 207
scævola 190, 241
separata 189, 257
sicheliana 187, 217
simillima 192, 254
solola 189, 236
Sumichrasti 185, 189, 222
tecta 186, 216
texana 186, 212
thetis *Blake* 186, 214
tisiphone 186, 210
toluca 186, 235
Ulkei 189, 238
ursula 184, 218
venifica *Blake* 186, 210
verticalis 189, 221
vesta 190, 240

PAGE

Sphærophthalma vestita.....183, 218
virguncula *Blake* 192, 253
vulpina 188, 255
waco.....186, 229
Wilsoni 185, 232
xalapa.....186, 245
xalisco.....189, 237
zapoteca.....186, 245
zelaya.....183, 186, 211
zenobia.....187, 220
Sphegina 314
Sphixea.....324
Spilographa electa.....307
Spilomicrus 175, 176
Stenocorus, Olivierian species.....138
Stenopogon æacidinus *Will.*.....289
Stenurges floridalis *Hulst.*.....156
Sterphus 322
Stethon 10, 12, 55
errans *Horn* 13
pectorosus.....13
Stichopogon trifasciatus.....289
Stictothrix 174
Stilbosoma 322
Symphoromyia pachyceras *Will*...287
plagens *Will*.....287
Sympiezus flavipes *Ashm.*.....133
Synacra 176, 177
Synarsis 171
Synergus.....63
Synopeas 173
Syntomaspis californica *Ashm.*.....127
Syritta 322, 324
Syrphidæ of South America.....308
Syrphus 311, 323
Systole brachyptera *Ashm.*.....126
Teleas.....172
Telephorus, Olivierian species.....137
Telonomus 172
Temnocera.....317, 323

PAGE

Tenebrio, Olivierian species 138
Tetrastichinæ.....134
Tetrastichus acutus *Ashm.*.....134
flavipes *Ashm.*.....135
racemariæ *Ashm*.....134
rosæ *Ashm*.....134
Tharops.....55, 68
umbila.....9
ruficornis.....8
Thereva crassicornis *Will*.....293
vialis 293
Therevidæ.....293
Thoron.....172
Thoripalpus atrifascialis *Hulst*.....160
euthealis *Hulst*.....160
olivalis *Hulst* 160
taleolalis *Hulst* 160
Torymina 127
Tribalia.....61
Trichacis 174
Trichosteresis.....171
Triclis tajax 289
Trimorus 172
Trogossita, Olivierian species.....137
Tropidia.....321
Trox, Olivierian species.....136
Ubristes.....324
Volucella 316
Wilt, Charles, Obituary Notice....vi
Xenomerus.....172
Xenotoma 177
Xestonotus.....173
Xiloteja 324
Xylobius 11, 38, 57
cylindriformis.....38
Xylota 321
Zelotypa.....177
Zinckenia perfuscalis *Hulst*.....159
Zygota.....176, 178

VOLUME XIII, NUMBER 1.

TRANSACTIONS

OF THE

AMERICAN

ENTOMOLOGICAL SOCIETY

AND PROCEEDINGS OF THE

ENTOMOLOGICAL SECTION

OF THE

ACADEMY OF NATURAL SCIENCES.

PHILADELPHIA:
GEORGE H. CRESSON, ENTOMOLOGICAL PRINTER,
No. 55 North Seventh Street.
1886.

VOLUME XIII, NUMBER 2

TRANSACTIONS

OF THE

AMERICAN

ENTOMOLOGICAL SOCIETY

AND PROCEEDINGS OF THE

ENTOMOLOGICAL SECTION

OF THE

ACADEMY OF NATURAL SCIENCES.

PHILADELPHIA:
PAUL C. STOCKHAUSEN, ENTOMOLOGICAL PRINTER,
No. 55 North Seventh Street.
1886.

VOLUME XIII, NUMBERS 3 & 4.

TRANSACTIONS

OF THE

AMERICAN

ENTOMOLOGICAL SOCIETY

AND PROCEEDINGS OF THE

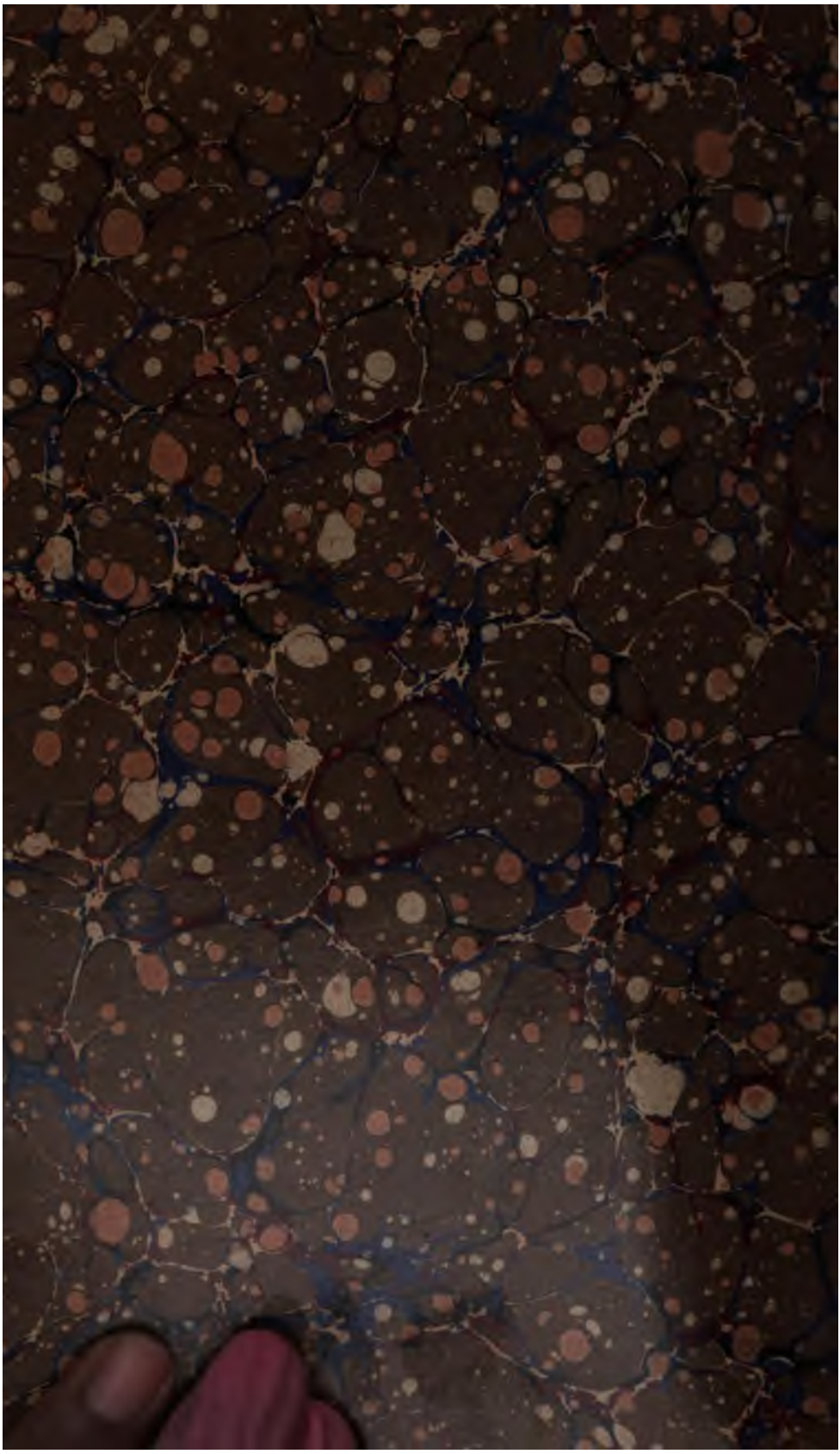
ENTOMOLOGICAL SECTION

OF THE

ACADEMY OF NATURAL SCIENCES.

PHILADELPHIA:
PAUL C. STOCKHAUSEN, ENTOMOLOGICAL PRINTER.
No. 55 North Seventh Street.
1886.

595.706
A512a
V13



For
USE IN LIBRARY